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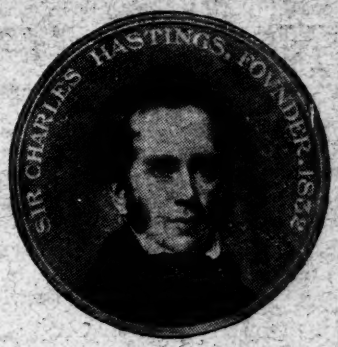

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British Medical Journal.

THE JOURNAL OF THE BRITISH MEDICAL ASSOCIATION.

LONDON: SATURDAY, JANUARY 1st, 1916.

Remarks
ON THE
GENERAL TREATMENT OF INFECTED "GUNSHOT WOUNDS"
*FROM A CLINICAL POINT OF VIEW.**

BY

COLONEL H. M. W. GRAY, A.M.S.(T.),

CONSULTING SURGEON, BRITISH EXPEDITIONARY FORCE, FRANCE.

WE have been compelled, since this war began, to acknowledge the inefficiency of antiseptics when used as preventive or disinfecting agents in badly infected, lacerated wounds. Until applications were employed which stimulated a concentration of the general defensive forces of the body in and around the wound, no real advance in treatment was made. It mattered not what kind or what strength of antiseptic, pure and simple, was used, the infection ran a fairly definite course of fairly definite duration, which varied merely according to the patient's power of resistance. While the importance of free drainage was very speedily acknowledged, quite a long time passed before there was any satisfactory recognition of the fact that the resisting agencies of the patient's own body are far more effective in dealing with a local infection than any purely antiseptic solution, powder, or paste introduced into it from without.

Too great credit cannot be given to Colonel Sir Almroth Wright for his work in connexion with this matter. It must be gratifying to him that his laboratory experiments have now been so fully confirmed by clinical experience. There is no need to discuss the merit of his work; it suffices to say that the principles of treatment which he has laid down govern, very largely, the methods now in use in the British hospitals at Rouen.

The tissues implicated in a severe wound are more or less devitalized by the severity of the trauma, and are thus rendered more vulnerable to the onslaught of microbes. This is seen in the slow healing of insignificant skin wounds caused by a bullet, even though they are only very mildly infected. The temporary functional inhibition induced by the injury is probably aggravated and prolonged when ordinary antiseptics are used in large wounds. Organisms which have invaded the tissues are not killed by the action of antiseptics as such unless they are in a layer of tissue directly affected by an antiseptic sufficiently strong to destroy it. Antiseptic applications can affect practically only those organisms which are actually in the cavity of the wound, but they can prevent fresh infection and the spread of infection from one case to another; their use for these purposes should never be omitted. What has to be aimed at, however, is to support and stimulate the forces of defence which the patient himself can bring to bear on the invading organisms, by both local and general means. There is ample evidence, obtainable daily in the wards of a large hospital, that the new principle which guides the treatment of seriously infected wounds is of far greater importance than that involved in the use of antiseptics as hitherto applied. All successful treatments of infected wounds depend on calling forth these physiological forces, these protective elements of the body, whether fluid or cellular, or both. It has been proved to the satisfaction of the large number of surgeons working in my area that the use of salt solutions, applied in various ways, fulfils all the striking claims made for it by Sir Almroth Wright.

The addition of antiseptics to the salt solution is not yet proved to be of any advantage to the wound once it has become seriously infected. Cases treated by hypertonic salines alone compare most favourably with similar cases treated even by those antiseptic solutions most recently advocated, as, for example, those cases of gas gangrene recorded by Captain John Fraser[1] treated by hypochlorous acid, or eusol solution. A few of our surgeons add eusol to the salt solution, as they consider that it removes the bad odour of wounds more quickly and hastens the separation of sloughs. After observing a very large number of cases, I am inclined to agree with others who are not convinced regarding these effects. Their attitude towards eusol is expressed in the remark—"It does no harm." In virtue of its having hypertonic and deodorizing effects, eusol acts well when used for continuous irrigation or baths. It seems to do well also in some cases of *pyocyaneus* infection. But it does not deserve to supplant salt treatment.

Judging from what has been written about the hypochlorite treatment, especially by Dr. Alexis Carrel, it is not unlikely that it may be adopted widely before the possible drawbacks to its general use are appreciated. It may prove eminently successful in aborting infection in wounds which can be treated early, before micro-organisms have penetrated into the tissues, but its use for such a purpose apparently demands great attention to detail, both at the primary operation and during the succeeding days, before the wound can be pronounced free from microbes. It thus calls for the expenditure of more time and for a greater number of attendants than are usually available, even if the patients could be put under the treatment early enough. The treatment cannot be carried out during transport of a large number of cases, and is, on that account especially, unsuitable during a "rush." After the recent severe fighting (September 25th and following days), when the hypochlorite treatment was being used at many of the casualty clearing stations, the condition of severe deep wounds arriving in Rouen was no better than had been that of those arriving from fights earlier in the campaign—for example, from Neuve Chapelle or Hill 60.

For routine and general use under such conditions as exist on the British front and lines of communication in France it is requisite that some dressing should be available which is effective in preventing severe sepsis, easy to carry, simple in application, economical of material and time, and so continuous in action that little attention is necessary during transport. Hypertonic saline dressing, especially in the form now known as the "tablet and gauze pack," fulfils these desiderata better than any other yet applied. As Colonel C. B. Lawson has said, "many wounds treated in this way arrive in such excellent condition that during a rush the men can be transferred directly to England, without more interference than adjusting the superficial dressings. The patients' temperatures are normal and the wounds are free from surrounding inflammation." The method of using the "tablet and gauze pack" will be described later, but it may here be pointed out that the slow dissolution of the tablets in the

* Read before the Rouen Medical Society (R.A.M.C. Officers) on November 27th, 1915.

folds of gauze, which sometimes occupies many days, provides a continuous supply of hypertonic solution until they are completely dissolved.

SOME GENERAL CONSIDERATIONS GOVERNING THE USE OF SALT SOLUTIONS.

Attention must be drawn to certain important factors which have a very direct bearing on the successful application of simple solutions of salt.

1. The solution must be brought into contact with every infected part of the wound.

2. Hypertonic solutions stimulate a more or less profuse flow of lymph containing antibodies, and thus bring about what has been called "lymph lavage" of the tissues lining the wound.

3. Isotonic or physiological salt solution stimulates diapedesis—that is to say, it brings about a concentration of leucocytes in these tissues. These phagocytes are in large measure shed into the wound cavity and form pus corpuscles.

4. The micro-organisms causing the infection make their way into the tissues lining the wound in a few hours. The rapidity and depth of penetration vary according to the kind of organism, the amount of devitalization of the tissues, and the method of treatment.

5. The infective material is carried by the missile into the depths of the wound; any superficial treatment is therefore of no practical benefit, except in preventing fresh infection.

6. The presence of effused fluids, whether blood or lymph, of foreign bodies, and of badly lacerated or necrotic tissues, favours the rapid growth of organisms in the wound and hinders their expulsion from it.

7. Wounds deteriorate in condition, inflammation may become rampant, especially during transport, if the wounded part be not properly fixed and supported, even although no fracture be present.

8. A patient whose vitality is very low owing to the severity both of the wound and of the sepsis is unlikely to fight serious infection successfully and to survive a conservative operation and the strain which after-treatment involves. The question of amputation must therefore occupy a far more prominent place in the mind of the surgeon than it does in civil practice.

9. The method of treatment must therefore vary according to the nature of the chief infecting organisms, the physical character of the wound, the general condition of the patient, and according to whether he is to be transported or not within a short time.

Bacteriological Indications.

Although the clinical characters of the wounded part often give quite reliable indications of the important bacteriological contents, yet a report from the laboratory on the kind of organisms present may be of the greatest service. For example, the streptococcus thrives in lymph, but finds in the phagocyte a very deadly enemy. Therefore, when it is found that streptococci are making headway in a wound, or are found in pure culture in a joint, isotonic solutions should be used for treatment of the wound or washing out the joint.

In ordinary deep wounds, however, and especially in the early stages when multiple infection is likely to be present, hypertonic applications are best.

OPERATIVE TREATMENT.

Free incision or excision of the superficial parts of the wound, including especially the deep fascia, is practically essential to success, in order to make it possible to cleanse and drain thoroughly and to insert the "tablet and gauze pack" properly. Exposed aponeurotic structures are certain to slough, hence they should be cut away. At the beginning of the war there existed a great antipathy in many quarters to making fresh incisions in the presence of acute and even of chronic sepsis, because it was thought that such incisions, by laying bare fresh tissue, entailed a greater risk from the spread of infection than the simple insertion of a large drainage tube through a smaller opening. When suitable saline treatment is used it is found that there is no such increase of danger; quite the reverse. The success of the open method of treating amputation stumps amply demonstrates the truth of this.

Transverse or oblique incisions admirably fulfil their purpose and are sometimes compulsory, yet one must remember that only rarely can a muscle which has been cut completely across be united again satisfactorily. Transverse incisions, therefore, are apt to be mutilating and harmful to function afterwards. A smaller cone-shaped excision, in which part only of the muscle is sacrificed, sometimes gives even more efficient drainage. It must be remembered that occasionally the whole belly of a muscle is virulently infected. When that happens the muscle will necrose, and it is far quicker and safer to excise the whole muscle at once—for example, the rectus femoris or gluteus maximus. In any case it is best to insert a finger in the wound and examine its extent and arrangement before deciding what form of incision or excision is to be employed.

Counter-openings at the most dependent parts of the cavity are of great importance in certain cases.

Cleansing of the Wound.—Extraordinary divergence of opinion exists as to what constitutes thorough cleansing of the wound. Mere blind twisting of a swab inside a wound cavity may do as much harm as good. Simple flushing through with a solution is very ineffectual, and if hydrogen peroxide be used infective particles may be carried into recesses of the wound which were previously clean. A lacerated deep wound should be thoroughly opened up and every pocket of it examined and enlarged if necessary. Meticulous care should be exercised in removing foreign bodies and blood clot by forceps, fingers, or swab, and clipping away all necrotic or badly lacerated muscle or fibrous tissue. Irrigation is rarely necessary or desirable. Each pocket must then be carefully packed in the manner described later. If any recess be left untreated, there is great risk that the wound will not do well.

Fixation of the wounded part must be secured, in mild cases by proper bandaging, in severe cases by splints, even although the soft parts only are affected. Efficient fixation will limit effusion and consequent swelling, as well as the amount of pain which the patient will suffer.

Support.—The soft parts must be prevented from sagging, especially when deep lacerated wounds accompany fractures of such a bone as the femur. Support is best provided in such a case by suitably shaped "gutters" of sterilized perforated zinc, which are placed under the limb. The edges of the gutter are bent over the bars of the modified Thomas's splint which is now almost universally used for such cases. Holes are cut in the zinc, if necessary, to allow the passage of the drainage tubing. When the zinc covers the wound, not more than a couple of layers of gauze should be placed between the two. The external dressings are applied over the zinc; any sharp edges which might cut into the skin are rounded off and padded. The apparatus may require removal and thorough cleaning about once a week.

DRAINAGE AND THE KIND OF DRAIN.

The primary object of drainage is, of course, to prevent accumulation in dead spaces of fluids which will form favourable media for the growth of pathogenic micro-organisms, and which, on physical grounds alone, will prevent or delay healing by keeping the tissues from adhering. All the same, if the dead space is not large and can be obliterated by suitable bandaging, if the effusion is likely to be small in amount, and if the wounded part has been rendered aseptic—as, for example, after excision—then there is really no necessity for drainage. In certain cases—for example, when slight infection of the knee-joint or of the brain exists—the presence of a foreign body such as a rubber drain, and still more a glass or metal one, in the affected part will probably allow the sepsis to gain a firm hold, especially in the parts bruised by the drain—the very thing the drain is meant to prevent.

"Down to but not into."

The more delicate or highly organized a tissue is the more damage is likely to be caused by the introduction of a drain, especially a rigid one. Experience has shown that the principle of introducing such drains "down to but not into" the important structure or cavity which has to be drained is sound. It matters not whether brain, shattered bone, pleural or synovial cavity has to be drained—this principle holds

good. This refers to the preventive function of the drain that is in use when the infection has not yet obtained a firm hold.

When infection is really well established, and is already causing suppurative encephalitis, osteomyelitis, or synovitis, the matter is more difficult and requires much judgement. The presence of decomposing blood-clot, loose purulent lymph-clot, or even of offensive pus in a joint, although the synovial membrane be swollen and injected, does not mean that the joint is inevitably doomed to destruction. Many brilliant results have been obtained, even in the knee-joint, which was thought to be particularly vulnerable, when the cavity has been cleansed thoroughly of foreign bodies and purulent contents, washed out with saline solution of appropriate strength, and then drained by a tube which led down to but not actually into the hole in the synovial cavity. In some cases—and this depends on the character of the wound left after operation—leaving the wound open, no drainage being inserted, and protecting it from secondary infection seems to be an equally efficient method. Absolute fixation of the joint afterwards is indispensable to success.

Drainage of the brain, when abscess has formed round imbedded bone or foreign body, is a very difficult matter; rigid drains are particularly harmful to the brain. This is especially true if holes be cut, for the intracranial pressure forces even normal brain through the holes or the end of the tube; moreover, the constant friction of the pulsating brain against the hard foreign body must have a bad effect. The most satisfactory drain seems, on the whole, to be a piece of jaconet, batiste, or similar substance, folded concertina-wise, with small pieces of salt tablet imbedded in its folds. As the salt dissolves it exerts a hypertonic effect on the surrounding inflamed brain. If, however, the pus be particularly thick or profuse, it may be necessary to insert, in addition, a tube for a short distance and for a short time.

A drainage tube thrust amongst the fragments of a shattered bone will tend to carry infection, and in any case to cause necrosis of the fragments in contact with it. A drain on each side, down to but not into the shattered mass, will do all that is required.

Rigid drains in contact with pulsating vessels predispose to secondary haemorrhage. In a septic wound they are practically as efficient in causing this as are displaced fragments of bone or pieces of missile. When drainage of wounds which expose large vessels is required, the advantage of transverse incision of muscle or cone-shaped excision is obvious, together with, possibly, the use of the absorbent bandage drain.[2]

It is not, as a rule, good practice to draw a non-collapsible drain through the whole length of a wound, unless the track is superficial. Even if it is, it is in most cases quicker and safer either to excise and suture the wound entirely or to lay it open and make secondary suture as soon as it is healthy. It is especially dangerous to draw tubes through between the bones of the forearm or leg. The tube is likely to cause, from its pressure, sloughing of the interosseous membrane, secondary haemorrhage from the vessels which lie close to the membrane, and paralysis from destruction of the nerves which accompany these vessels.

Removal of Drains.

When the wounds are healthy, and if there be no necrotic tissue in the depth, it is desirable to remove drains altogether, provided the surfaces of the wound are forced in contact, but it is probably safer practice to shorten them gradually. Rigid drains should give place to soft drains (jaconet, batiste, torn glove, or absorbent bandage) as soon as the discharge ceases comparatively to be profuse. This is usually when necrotic tissue has been cast off or absorbed.

Tension.

Tension in a wounded part militates against successful treatment. It interferes with the efficient circulation essential for the combating of infection; parts which are best supplied with blood—for example, the scalp or face—heal most quickly. Therefore, another great principle is established—that the tension must be relieved, whether in a joint, in the thigh, in the chest, or in the brain. The extensive incisions which are advocated in many cases probably do as much good by relieving tension as by providing free drainage.

Removal of Foreign Bodies.

Whether foreign bodies should be removed depends, firstly, on their size, shape, character, and position, which determine the amount of infective material carried in to the wound; and secondly, on the mobility of the part in which they are lodged and the probable effect on its function. The more important the function the greater is the necessity for early removal.

The amount of infection carried into a wound depends chiefly on the shape and roughness of the missile, and whether it has traversed the patient's clothing. An undistorted rifle bullet carries in a negligible quantity. Shrapnel balls, distorted rifle bullets, and fragments of shell practically always carry in sufficient to cause inflammation. But shrapnel balls and fairly smooth pieces of shell may be quickly wiped so clean during transit through the tissues that they do not cause infection where they lodge. It may quite often be observed that while sepsis becomes established around the entrance wound, the deeper parts of the track remain or become sterile, and no inflammation occurs around the missile itself, so that it can often be removed aseptically through a fresh incision.

All are agreed that irregular fragments of shell, distorted rifle bullets, and superficial shrapnel bullets should be removed as soon as possible. Difference of opinion exists concerning the necessity for and proper time of removal of undistorted rifle or shrapnel bullets or small pieces of shell which are not causing trouble or which are difficult to reach. The decision should really be governed by the importance of the structures in or near which they are imbedded, and the amount of movement which ordinarily takes place. Thus, if buried in bone—in the condyles of the femur, for instance—a rifle bullet almost always, and a shrapnel bullet very frequently heals in, and may remain permanently without causing irritation. If in the belly of an important muscle any foreign body, unless comparatively minute, will sooner or later have to be removed. It is dangerous to leave any kind of foreign body in close proximity to a large pulsating vessel. Ultimately it will cause secondary haemorrhage or aneurysm. The more irregular it is in shape the sooner will trouble occur.

The structures forming a joint lie, ordinarily, in such close proximity during movement that there is no room for any extraneous material. While an aseptic foreign body, lying free in a joint, may cause no irritation so long as the joint is kept at rest, very rarely can the joint be moved to any extent without lighting up trouble, so that removal as early as possible is indicated. Much more is this the case when sepsis is present.

It is remarkable and somewhat inexplicable that in some quarters it is apparently the practice to treat the brain—possibly of all organs the most important, the most delicate and the most susceptible to continued irritation—on a different principle. I need only say at present that it seems very unjust to the patient that his brain should be selected as an exception to a principle whose application is attended with such success in other parts of the body.

X Rays.

The importance of accurate localization has been borne in on us all in various ways from time to time. When a special localizer or stereoscopic apparatus is not available the part should always be skiagraphed in two planes, preferably at right angles to each other.

Antitetanic Serum.

No matter how insignificant the wound, every patient should receive a prophylactic dose of antetanic serum if there be a chance of soil having been implanted. If doubt exists as to whether a dose has been given at the front, the surgeon at the base had better make certain by giving one. The fear of anaphylaxis is an insufficient excuse for not giving the serum, but in the case of a man wounded for the second or third time it is probably safer to give it in "fractional" doses, especially if he reports having shown any of the manifestations of serum sickness after previous injections.

After-dressing.

The tendency is to dress wounds presenting raw areas far too frequently. Experience has shown that frequent

dressing may be very detrimental. Speaking generally, a dressing is used: (*a*) To protect the wound from deleterious influences; (*b*) to keep it at rest so that healing may proceed rapidly; (*c*) to soak up and thereby remove discharges which may accumulate on the raw surfaces; and (*d*) to act as a vehicle for substances which, by their direct or indirect action, are antagonistic to infecting organisms. A further—very important—attribute of the perfect dressing for the severely wounded man, whose nervous system is so often in a very precarious condition, is that it should be painless, at least very soon after it has been applied.

The following statements apply chiefly to large, deep, irregular wounds, which are the most complicated, but with slight modification are applicable to other types.

The superficial dressings only should require frequent changing, and they ought to be changed whenever they become soaked with discharge. They, as well as the skin, should be treated with some antiseptic application. For deep dressings, absorbent gauze is in general use. This usually adheres rapidly, and later becomes incorporated more or less with the layer of granulation tissue which appears very early. It performs an important function in preventing excessive absorption of poisonous material from the wound. It covers and nourishes the numerous small pieces of aponeurotic tissue which are exposed after such a wound is cleaned up. The gauze must be packed into a wound fairly firmly, so that the granulations will not penetrate far into its meshes. It must not be packed too firmly into the recesses, otherwise the tissues lining the wound are rendered anaemic, and the healing process is interfered with, indeed localized necrosis may occur. Good circulation predisposes to rapid healing. It is also obvious that the gauze must not be laid in too loosely, at all events during the early stages when the infecting agents may be in the ascendancy, otherwise it will act as a deleterious foreign body. The exudation absorbed by loose gauze provides abundance of foodstuffs for these microbes, and such a gauze dressing forms very soon a veritable "pus poultice" which ought to be removed as soon as possible.

The Tablet and Gauze Pack.

The gauze pack should contain in its folds some material antagonistic to the development of these microbes, and the supply thereof should be as constant as possible. This can be achieved by putting into the wound a system of tubes which carry fluid to all parts, but experience has shown that the salt "tablet and gauze pack" procures the desired result at least equally well, and with much less trouble to all concerned. When properly used it entails the least possible disturbance and pain to the patient during the early days of convalescence. A little practice teaches the operator the degree of pressure proper to be used for wounds in the different regions of the body. Such a dressing, if adherent, should not be removed unless for some very definite reason. When it is pulled off bleeding occurs, the protective barrier is broken down, the process

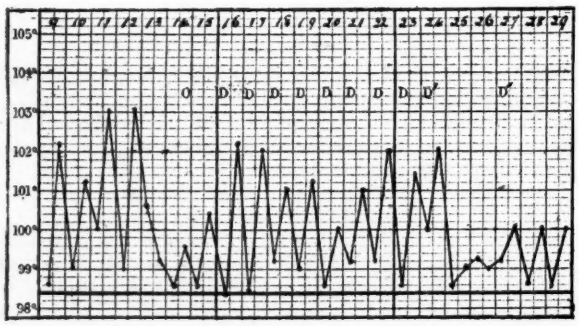

CHART A.—Case of amputation (O) through upper part of thigh. Several other septic wounds present. The high swing of the temperature (D, D—) ceased when the daily dressings were stopped. Observe the slight rise after the "permanent" dressing was changed (D¹).

of healing is interfered with, extensive sloughing of aponeuroses takes place, and the patient suffers excruciating pain unless an anaesthetic is given. Often the high temperature taken as an indication for changing dressings is not reduced; in fact, it may go higher still, and it is easy to see why this should be. The patient's general condition deteriorates for a similar reason, poisons being absorbed from the wound more easily through the reopened portals. His general resisting and recuperative powers are weakened, especially on account of the strain on his nervous system entailed by the repeated painful dressings. It may be also that the tearing down of this protective barrier predisposes to the occurrence of septicaemia.

On the other hand, if the wound is properly cleaned up, if a "perfect" dressing has been applied, and if the wounded part has been efficiently fixed and supported, it will be found that in a few days the temperature is normal, the wound and surrounding parts are healthy, the patient is happy and his general condition immensely improved. If the dressing is torn off before the temperature is normal, or even within a couple of days of its having become so, the fever will probably return within a few hours. The temperature will probably descend gradually if the dressings are again left undisturbed, and will as probably continue to be remittent so long as the dressings are changed frequently. Similar phenomena are observed after secondary suture or when, after complete arthrotomy of the knee, the granulation covered articular surfaces are fixed in their normal positions (Chart B). A continued high temperature should, however, always make us search for some other adequate explanation which may not be directly connected with the wound. Metastatic abscesses are often very insidious in their development.

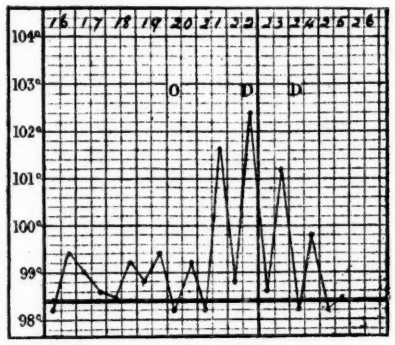

CHART B.—Case of severe shell wound of the knee. Arthrotomy by transverse incision. Other lateral incisions radiating from this laid abscess cavities open. Fixation in acute flexion till wounds were covered by healthy granulations. This chart indicates the general disturbance which occurred when the knee was straightened on September 20th (O). The last dressing (D) was made on September 24th.

The indications for changing such a dressing are: (*a*) When it is evident from the condition of the parts surrounding the wound that there is retention of pus in a pocket or that extension of the inflammation is taking place; (*b*) if deterioration of the patient's general condition is occurring when there is no complication present to explain it; and (*c*) when the deep dressing becomes so offensive that it is annoying to the patient. In the last case, however, the dressing is usually loose and ought to be removed, as it then forms an irritating foreign body.

Ordinarily, however, this "tablet and gauze pack" can be left in for many days—in test cases it has been left even for fourteen days. After the first twenty-four hours or so it often keeps wonderfully dry. Apparently this happens when the necessity for lymph lavage has passed, but no satisfactory explanation of this phenomenon has yet been afforded. There is no advantage in leaving the pack *in situ* after the temperature has been normal for three days or so. Usually in six to eight days the pack is removed, preferably under an anaesthetic. The second packing should be slightly less in extent than the first, and the bandage should be applied again fairly firmly so as to obliterate any potential dead spaces in the depth of the wound. Each successive packing should be diminished in this way. The wound, by the time it is covered by healthy granulations and ready for secondary suture, will probably be greatly reduced in size. In a case of this kind, where a huge wound situated in the upper arm was associated with severe fracture of the humerus, the dressings were changed only five times during a month; at the end of that time the wound could

be practically obliterated by properly applied strapping (Chart C).

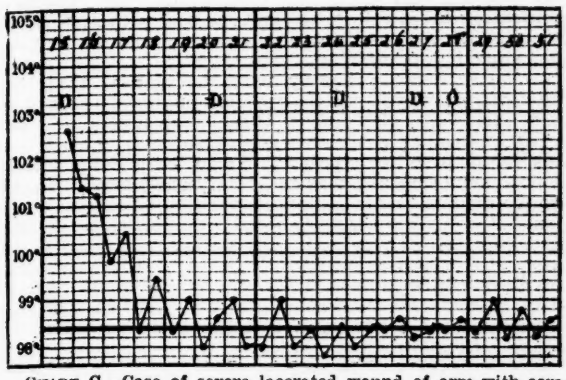

CHART C.—Case of severe lacerated wound of arm with comminuted fracture of humerus—lodgement of fragment of shell and clothing. O, Operation for removal of dead bone. Dressed for first time on fifth day (D) after operation and packed with "tablets and gauze."

A dressing of this kind is not suitable to every case of deep lacerated wound. The extent to which the infection has progressed amongst the fragments of a splintered bone may make the use of any sort of pack dangerous. Such considerations force us to rely on other forms of treatment by simple drainage, by continuous irrigation, by baths, and so forth. It may, however, be said that practically if this form of dressing be not successful in combating the inflammation in a deep wound of the extremities the chances of saving the limb are not great, but if such wounds come under treatment fairly early its use may be recommended with every confidence. Further, seeing that this dressing acts so satisfactorily in some types of complicated wounds, it should not be impossible to find one which will be equally satisfactory in other types.

EXCISION OF WOUNDS.

As I have pointed out,[3] many "gutter" or even "punched-out" wounds, some of them of large extent, can be excised and sutured at once, with great advantage to the patient and to the military service. It is unnecessary to discuss this procedure again. The results obtained afford ample justification for a wider employment of the method.

SECONDARY CLOSURE OF WOUNDS.

When the surface of the wound is covered with healthy granulations, and bacteriological examination shows that no specially dangerous organisms are present, many wounds can be closed with safety, provided no dead spaces in the depth are left undrained. When the granulations are flabby and the discharge profuse, it is necessary to prepare the surface for a few days beforehand. When a wound is thus unhealthy, a change to some kind of dressing other than that previously employed is indicated. Changing the strength of the salt solution, "spirit" dressing, the employment of astringent antiseptics such as acetate of alum, red lotion, picric acid, or in some cases glycerine, will be found efficacious in improving the condition of the wound.

Much can be done to reduce the size of the wound before suturing by drawing the edges together with strapping or by compressing the part by suitable bandaging. The strapping should extend far beyond the area of the wound, and great care must be taken that retention of discharge in the depth does not occur. The sutures should be inserted in the same way as "relaxation sutures," or those used frequently in the repair of a ruptured perineum—that is, they should, if possible, underrun the whole surface of the wound. Suturing in layers is practically never possible. When the sutures cannot be made to catch up the deepest part of the wound, a tube of suitable size or folded jaconet or "batiste" must be inserted to drain that part. The sutures should be prevented from cutting the skin by threading them through lengths of rubber tubing ($\frac{1}{8}$ in. or $\frac{1}{4}$ in.) which, when the sutures are tied, reach from one stitch hole to the other. The sutures should be removed early and the wound held together by narrow strips of adhesive plaster or mastic varnish dressing, applied before the stitches are removed.

GENERAL CONDITION OF THE PATIENT.

I do not propose to make any remarks about vaccine treatment, but it remains for me to say that the general condition of the seriously wounded man is deserving of more attention. It must be remembered that he has probably been subjected to severe physical and mental strain for days, if not for weeks, in the fighting line. Patients who are brought in looking cheery and fit may in a few days be physical wrecks, and extraordinarily nervous and apprehensive. Owing to loss of nerve tone and the effects of sepsis everything seems to go wrong. Sleep fails. Appetite fails. Metabolism fails. Fats and proteins already in the system are used up, but oxidation is apt to be incomplete, and the patient has no desire for foods which contain them in large quantity. The great strain on the organs connected with metabolism and elimination, owing to the imperfect oxidation and sepsis, is apt to lead to their break down. The use of sedatives and general anaesthetics does not improve matters, but we cannot escape from using them, since the depressing effect of pain is to be feared even more. Sedatives have to be used freely, but those which are least harmful should be chosen. Omnopon is to be recommended instead of morphine for this reason. Similarly, ether should be used whenever possible instead of chloroform. In a large number of cases local anaesthetics, whether by spinal injection or peripheral blocking of nerves, can be used with the greatest advantage. The addition of potassium sulphate 0.25 to 0.5 per cent. to the solution enhances and prolongs the effect of local anaesthesia.[4] Definite symptoms of "acidosis" have not often been observed, but in many of these cases the chief predisposing causes thereof are present, and we should take measures to counteract them. Thus, during the critical period, we should give alkalis in ample doses, and foods (especially carbohydrates and sugars) which are very easily assimilated, and which do not produce many complex by-products during their metabolism. The administration of these substances, and also of fluids, by the rectum should not be forgotten.

RESULTS OF A SPECIAL INQUIRY.

In the experience of the surgical workers in the Rouen hospitals, the saline treatment of septic wounds has stood the test of time, while other methods have, after trial, been found wanting. At present it is used almost exclusively, all other treatments being looked upon as auxiliary. For example, as noted above, use is made of hypochlorite solution in some special cases.

Seeing that the claims of saline treatment had been urged chiefly by laboratory workers, it was thought advisable to collect evidence from clinical workers who had obtained sufficient experience. Accordingly, in July, 1915, a list of questions was sent to twenty-two hospitals in the area, and replies were received from all. These questions and an epitome of the replies are now submitted. It can be said with justice that the experience of the last five months has strengthened the faith in saline treatment.

For hypertonic treatment, solutions of 5 per cent. sodium chloride and 0.5 per cent. sodium citrate have ordinarily been used to begin with. As has been pointed out, the varying physical conditions and infecting agents of the wounds require variations in the strength and nature of the application if the best results are to be obtained. Sodium citrate is not absolutely necessary. Plain table salt has been found perfectly satisfactory for bath treatment when large quantities have to be used. Plain glycerine, glycerine with salt or glucose, or the now old-fashioned ichthyol and glycerine, have been used in certain stages in certain infections when it is found that the simple salt solutions are not quite satisfactory. Hypertonic solutions of glucose or other sugars have not obtained favour to any extent.

Treatment by isotonic solutions can be carried out continuously only by baths, continuous irrigation, or by very frequent changing of fomentations.

Methods of Application.

Baths.—Great ingenuity has been displayed in supplementing the ordinary body, foot, hand, or forearm baths supplied. Some of the contrivances deserving special mention are: (1) Captain Donaldson's bath[5] for wounds below the middle of the thigh, but especially for the leg or

foot. The rubber collar causes a certain amount of passive congestion, which can be increased if thought desirable. (2) Captain R. S. S. Statham's adaptation of a curved earthenware road drain, closed by mackintosh sheeting at one end, for wounds below the shoulder. (3) The arrangement of mackintosh sheeting slung to a bed cradle, depicted by Major Adye-Curran, which can be adapted to practically any part of the body.

Continuous irrigation is carried out either by the "drop method" on to gauze which is laid loosely on or into the wound, or by small tubes leading to the recesses of the wound. The overflow is conducted into a receptacle at the side of the bed by suitably arranged mackintoshes. The absorbent bandage drains recommended by Colonel Sir A. Wright are, on the whole, preferable to ordinary gauze for this method.[6]

In using either of these methods it may be advisable to smear the skin which is immersed with vaseline or some other ointment. The use of "irrigation flanges" for preventing soaking of the clothing or bedclothes will prove of use in many cases.[7]

Simple soaks or fomentations—that is, gauze or lint wrung out of varying strengths of solution—are used in the same way as an ordinary fomentation, or are simply moistened at intervals without being removed. Their action is enhanced when they are applied warm.

Tablet and Gauze Packs.—After the wound has been cleaned by operation, all the recesses of the wound—these recesses should be sought out by the finger—are filled, fairly firmly, with gauze wrung out of 5 to 10 per cent. salt solution, in the folds of which are placed numerous tablets of salt. Blood clot which may form during the packing should be wiped away. The gauze should be packed in concertina-wise, a tablet being placed between every third or fourth fold. A fairly large, fenestrated rubber tube is placed so as to reach to the deepest part of the main cavity, which is then filled with gauze and tablets. The dressing is made flush with the skin and the tube projects slightly from its midst. The surrounding skin is painted with solution of iodine or other antiseptic application. Two or three layers of gauze are then used to cover the wound and surrounding skin. A suitable amount of absorbent cotton-wool is applied and a bandage wound on smoothly and firmly.

Should pus collect in any isolated part of the wound, it is not necessary always to remove the whole of the pack, and thus to cause the patient unnecessary pain, and to jeopardize the healing of the rest of the wound. Irrigation and drainage of the affected part may be instituted. The rest of the "pack" will probably become loose in a few days. If it is suspected that any part of the wound will give trouble in this way, a drain down to that part should always be inserted.

Questions regarding Saline Treatment, sent to Twenty-two Hospitals, in July, 1915.

1. Do you find "hypertonic" treatment of wounds (by salt, glycerine, or other solution) satisfactory when compared with other methods?
2. What method of applying it (bath, continuous irrigation, simple soaks, gauze and tablet packs, etc.) do you find most satisfactory? Can you differentiate types of cases in which one method is likely to be superior to another? Do you alter the strength of the solution for different cases?
3. Is the addition of "antiseptics" to the applications of any advantage?
4. What are the indications for discontinuing the treatment?
5. Do you find that patients complain of severe pain? If so, is this pain usually long-continued? Has it any relationship to the age or condition of the wound? Do you employ any remedy to allay the pain if complained of?
6. For how long periods at a time do you apply continuous bath or irrigation?
7. Are there any special points regarding this treatment not touched upon in these questions which you wish to be brought to notice?
8. Do you still use hydrogen peroxide to the same extent? For what purpose or class of case do you find it useful?

Summary of Replies.

The following statement represents, I think fairly, the general opinion expressed in the replies to these questions:

1. The average opinion was voiced in the reply, "Yes. In the opinion of all the surgical workers of this hospital, distinctly superior to other methods." Several replies were most enthusiastic. One surgeon, however, stated that in his experience the value of the treatment was still *sub judice*, and he was "not convinced that it fulfils the claims made for it."

2. The answers bring out clearly that the method of application must vary with the type and situation of the wound, with the condition of the wound, and the length of time since it was inflicted.

(*a*) *Baths* were probably most popular at that time. Practically always used in wounds of distal parts of the extremities, especially when these were multiple; where purulent discharge was very profuse, and "when heat was found to relieve pain." Warm 5 per cent. solution of ordinary table salt was most frequently used. Tablets are too expensive for making up large quantities of solution. If solutions stronger than 5 per cent. are used at first, pain is often caused. By adding a handful of salt every fifteen to thirty minutes to a big bath, the strength can gradually be increased, if thought necessary. No more salt is added after the patient begins to complain of pain. Sometimes the 5 per cent. solution must be reduced in strength by adding more water.

(*b*) *Continuous irrigation* was mostly used after flapless amputations: for joints which had been laid freely open and in some deep open wounds which could not be placed in a bath because movement was painful and undesirable (for example, in some compound fractures).

(*c*) *Simple soaks* for lacerated, shallow wounds, especially when they have begun to clean. Hot fomentations of 5 to 10 per cent. saline were strongly recommended by some for the relief of pain and to hasten the separation of sloughs.

(*d*) *Tablet and gauze packs* were judged to be best for deep and fairly recent wounds.

(*e*) *Drainage tubes containing salt tablets or suppositories* were recommended for long tracks and recesses. Colonel C. B. Lawson initiated this method. The discharge dissolves the tablets slowly, and a hypertonic action is exerted on the neighbouring tissues by the salt solution which diffuses from the tube. The good effects noted in some cases treated by this method stimulated the invention of the "tablet and gauze pack," which is now, as already indicated, most frequently used.

It is interesting to observe that in July, while some preferred to use continuous baths for cleaning deep wounds in the early stages, and then to change to packing with simple soaks or tablets and gauze, the majority preferred to use tablet and gauze packs at the beginning and after the first dressing to use baths or continuous irrigation. As faith in saline treatment became more firmly established it was almost natural that the method should be evolved of changing the packs at long intervals and reducing the size of the pack at each dressing until the wound could be closed or the pack dispensed with. This development has been attended by great success. Pain, time, trouble, material, and expense are saved.

3. The general opinion was that the hypertonic treatment had been so satisfactory that it was unnecessary to add antiseptics. One surgeon thought that antiseptics retarded the action of the salt. One added "a little carbolic or lysol if the wounds have a markedly offensive odour." Of course, all used antiseptics for cleansing the skin around the wound. (The attitude at present towards "eusol" or hypochlorite solutions is neutral, in some cases "benevolently neutral"!)

4. The general opinion was that the treatment by salines may be discontinued when the wound is clean and covered by healthy granulations. Some added, "when the temperature is normal," "when there is a tendency for the wound to bleed," and "when granulations become exuberant and flabby." One surgeon replied, "On cessation of the acute discharge and anaemia." It was pointed out that in some cases the profuse lymph flow, provoked especially by baths and continuous irrigation, "drained" the patient's strength and tended to make him anaemic. The continuous gauze pack does not have this effect.

5. Extraordinary variety of opinion was expressed in the replies. Some stated that little or no pain or only transitory pain was complained of. Others said that pain was often severe, and lasted for fifteen to thirty minutes. A general opinion seemed to be that it depended more on the type of patient than on the type of wound. Direct application of tablets to raw surfaces seemed to be productive of most pain; occasionally it caused sloughing, especially of granulations. It was suggested that manipulation might be the cause of pain after packing had been used. It was rare to have patients complain of pain if general anaesthesia had been employed for the packing. (An anaesthetic should always be used to ensure proper packing of a large wound.)

Regarding the relation of the age or condition of the wound to the amount of pain produced, some regarded the

early "tissue shock" as rendering the patient less liable to pain; others said that if the wound was recent and "clean," the pain was greater than if the wound was a couple of days old and in a sloughy condition. The general opinion seemed to be that when sloughs began to separate and granulations to appear salt or glycerine dressings were apt to be painful, and that this was an indication to reduce the strength of solutions, or to change to some other kind of dressing.

The use of salt dressings had not provoked a larger use of such remedies as aspirin or morphine to relieve pain. It was pointed out that it is especially important to cut nerves short in amputation stumps when hypertonic saline dressings are to be applied to the raw surface. The suggestion was made that sulphates (magnesium or sodium) instead of ordinary salt might be used. (They have apparently a good effect in reducing pain, but have not been tried extensively. The necessity for their use is not great, and less is now heard about pain.)

6. Some used baths only for two hours at a time—two to four or more applications in twenty-four hours. Some gave only one bath a day; others used baths continuously for as long as forty-eight to seventy-two hours, or even longer, with good results, and without complaint from the patient, except on account of the irksomeness. One disadvantage of these methods is that they are "more troublesome to the patient and to everybody else." The general rule seemed to be to use baths and irrigation during the day and soaks or irrigation by night. They were discontinued when the sloughs had separated.

7. Any recommendations elicited in replies to this question have already been incorporated in the paper. Colonel C. B. Lawson pointed out that "warming the dressing, as with a hot-water bottle, greatly increases the lymph flow." Several surgeons drew attention to the fact that the salt tablets are "opaque to x rays, the density being midway between that of bone and metal."

8. The majority of replies stated that hydrogen peroxide was used very occasionally. Practically all used it only for its mechanical effects, especially in loosening dressings. (It is used less than ever now.)

December, 1915.

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SENSITIZED SHIGA AND FLEXNER VACCINES IN THE TREATMENT OF CHRONIC BACILLARY DYSENTERY.

BY

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AT the present time chronic bacillary dysentery is the most difficult and unsatisfactory of the more common bowel diseases in warm climates to treat, causing much misery and invaliding, while in the native population, among whom neglected cases are commonly met with in civil hospitals, the mortality is very high.

The introduction of dysentery vaccines some years ago, especially by Forster of Lahore, was an important advance, and a number of good results have been recorded from its use, chiefly in Indian gaols, although it failed in some of them. Unfortunately its use is not without serious drawbacks. In one case in Calcutta fatal gangrene of the bowel closely followed the repetition of the same dose which had previously been given without ill effect, while I have several times seen serious recrudescences of the disease produced by vaccines prepared in Forster's own laboratory, leaving the patients worse than before its use. Moreover, R. T. Rodgers [1] reports from the Raipur Gaol, Central Provinces, two cases treated with Forster's vaccine in which a severe negative phase, characterized by an increase in the symptoms lasting three to six days, followed its use, and ended fatally on the fourth and fifth days respectively. In one of these perforation of the large bowel with acute inflammation and congestion throughout was found *post mortem*. These unfortunate results are clearly due to the great amount of intracellular toxins in dead Shiga bacilli, for it is well known that an injection of the dead organisms into rabbits produces necrosis of the mucous membrane of the large intestine, with all the pathological changes associated with acute bacillary dysentery, showing that these toxins have a selective action on the large bowel mucosa.

The foregoing considerations led me a year ago to apply Bedeska's principles to the preparation of a sensitized dysentery vaccine, in the hope of being able to prevent severe and dangerous reactions, and at the same time retain the beneficial action of the remedy. During the past year my opportunities for testing the sensitized vaccines I have prepared have been almost entirely limited to patients seen in consulting practice, still the severe reactions have been so entirely absent and the results sufficiently favourable to make it advisable to place them on record, especially now that many cases of dysentery are being reported from the Eastern theatres of war, which are likely to be partly at least bacillary in nature. I had hoped by this time to have been able to report the results of a carefully controlled test of my sensitized dysentery vaccines in the Assam gaols, which is being carried out, thanks to the kindness of Colonel H. E. Banatvala, I.M.S., but during the recent rainy season the dysentery cases were unusually few, so sufficient data are not yet available. In a few Indian patients treated by me in the isolation ward of the Medical College Hospital the results have also been favourable, but they remained such a short time under observation that it would not be safe to draw any conclusions from them.

The Lister Institute antidysenteric serum was used for sensitized stock cultures of Shiga and Flexner bacilli in the preparation of the vaccines.

The following are brief notes of a consecutive series of cases treated with my sensitized vaccines during the past year. In order to avoid the danger of conveying an unduly favourable impression I will begin with the failures.

I. *Cases in which the Treatment Failed.*

1. An Indian gentleman came down from Bihar to consult me for chronic amoebic dysentery, which yielded to emetine injections. He returned six months later, when the stools presented the characters of bacillary dysentery, although at first I failed to isolate the organisms. He improved for a time under injections of sensitized Shiga vaccine, but still occasionally passed thick mucus without blood, and I now isolated dysentery bacilli from his stools and wished to try an autogenous vaccine, but by the time it was ready he had passed into other hands, having been told he was suffering from "mucous colitis."

2. An Indian lady brought from the extreme South of India by her husband, who is a medical man. She had suffered from griping pains with the passage of mucus for several years, and had tried all kinds of treatment in various places. I found Flexner bacilli in her stools, and treated her for nearly two months with both sensitized Shiga and Flexner vaccines, with only temporary good effect. She is now having an autogenous Flexner vaccine, but has left Calcutta and I have not heard the result.

In these two cases only temporary benefit was obtained. The maximum doses given did not exceed 100 million, so possibly greater benefit might have resulted if more prolonged treatment with larger doses had been possible.

II. *Cases Much Benefited, but which Relapsed Later.*

3. A young adult European in Government service came to consult me from the Central Provinces for very chronic dysentery of long standing, accompanied by severe griping pain which greatly interfered with his work, and had led him to decide to retire from India if not better soon. I cultivated Flexner bacilli from his stools, and treated him with sensitized Shiga and Flexner vaccines, as I have more than once seen greater benefit follow a Shiga vaccine in cases showing Flexner bacilli in the stools than from a Flexner one—an observation which is easily understood in view of Dopter's work, showing that the bacteriolytic sensitizing substances produced by every one of the different varieties of dysentery bacilli are identical. The injections were continued after he left Calcutta by Major Fleming, I.M.S. After two doses of 50 million and one of 100 million at weekly intervals, he wrote that it had certainly done him a lot of good, as he had had no relapse, but still had a little pain in the left hypochondriac region at times, but his bowels were quite regular. Two months later Major Fleming kindly reported that the patient was

"enormously better, and in fact at times seems to be all right." Soon after Major Fleming was transferred, but on inquiry he recently informed me that he had heard that the patient had another attack of colic and had gone to England. In this case the benefit lasted several months, while particulars of his apparent relapse are not available. Here, again, larger doses and longer treatment would probably have produced more lasting benefit.

4. A European lady was sent down from up-country to consult me for chronic dysentery of four months' duration, with the passage of large quantities of mucus, described by her doctor as "regular sheets of mucous-like sloughs." Finding the disease to be bacillary in nature, I supplied some doses of 50 and 100 million sensitized Shiga vaccine, but the immediate effect of the first doses was reported as being slight. Four months later the patient wrote from England that the injections of vaccine had done her a lot of good, but she was then suffering from a relapse of a much milder form. Her statement was confirmed by her medical man, who asked for some more of the vaccine. This was sent, but there has not been time to hear again regarding her progress.

III. *Cases Greatly Benefited by the Vaccines.*

5. An Indian gentleman from the United Provinces consulted me for dysentery of eighteen months' standing, complicated by fistula, which had been freely opened up into the rectum. Large quantities of mucus were being passed, from which I isolated Flexner's bacillus and made an autogenous vaccine. After one dose of 50 million, which had little effect, a second dose was not taken until after two months, when much benefit resulted. Three more doses of sensitized Flexner vaccine of 50 and 100 million were injected, and two months later the patient reported that except for a little mucus on one day only he had kept quite free from his old trouble, very marked benefit having resulted from the vaccines.

6. A European male, sent to me from the Central Provinces by Lieutenant-Colonel Chapman, I.M.S., with a history of chronic dysentery for eight months. Among other forms of treatment, he had received two courses of emetine (one in Bombay), albargin enemata, which did good for a time, a course of coli vaccines, and a mixed dysentery vaccine from Kasauli, but without any lasting benefit. I cultivated dysentery bacilli from his stools and supplied him with doses of 50 and 100 million sensitized Shiga vaccine, which Major Chapman injected. Two months later the patient wrote that the results were quite satisfactory, the symptoms having been greatly reduced and his general condition improved. He went to Europe on ordinary leave soon after, with a supply of vaccine, to enable the treatment to be continued if necessary, and I have not heard of him since.

7. An Indian male, seen in consultation with Dr. S. C. Mallik. He had been suffering from chronic dysentery for about eighteen months, and was in an extremely emaciated and enfeebled condition, being unable to sit up in bed without help. All kinds of remedies had been tried without avail. I injected 50 million sensitized Shiga vaccine, and repeated the dose after a week, as the first injection had produced a marked improvement in the bowel condition. The dysentery now finally ceased, but a third dose was given later as a precautionary measure. He remained in a very weak condition for over a month with great nervous prostration, but eventually made a good recovery. I have no doubt that the vaccine treatment saved his life.

8. An Indian female, seen in consultation with Dr. Tarak Nath Sur, to whom I am indebted for reports on the progress of the case. She had been suffering from chronic dysentery for several months, was reported to be passing about forty small stools a day, with mucus and a little blood, evidently due to ulceration in the lower part of the large gut. No amoebae were present in the stools, while the microscopical characters were those of bacillary dysentery, although I did not succeed in isolating the dysentery bacillus. Emetine and numerous other forms of treatment had been tried without avail. Sensitized Shiga vaccine in doses of 50 and 100 million were injected weekly, and rapid improvement resulted. A slight relapse occurred several months later, but quickly yielded to the same line of treatment, the good effect having been very remarkable in this case.

9. A European male had been treated with emetine and salines for an attack of dysentery, but was still passing much mucus, which was increasing in amount. His stools presented the characters of chronic bacillary dysentery, and I injected him with one 50 million and four 100 million doses of sensitized Shiga vaccine at weekly intervals, with the result that the trouble completely disappeared. This was not a severe case, but the patient was greatly worried over his condition.

10. A European male, who had been attacked with dysentery eleven months previously, and had received twenty-three injections of emetine without any marked effect. After a change of climate he gradually got better, and six months after the attack commenced was practically well. A month later, with the onset of the rainy season, the trouble returned and continued for three months, emetine, Dover's powders, etc., failing to do any good; so it was decided to send him home. At this stage I was called in consultation, and examined a stool microscopically, which presented the characters of chronic bacillary dysentery, and showed no amoebae. I arranged for him to have one 50 and two 100 million doses of sensitized Shiga vaccine. He greatly improved after the first dose, and after the second he remained free from all symptoms for several weeks. He then passed a little mucus on one day only, and received an injection of 200 million of the same vaccine, after which he had no more trouble up to the time he went on his ordinary leave a few weeks later. He himself described the effects of the injections as being marvellous. It is, however, too early to say if the effect will be lasting.

11. An Indian male, who had suffered from occasional attacks of griping pain in the region of the hepatic flexure and descending colon for several years, while during the last six months the trouble had been present almost daily, the pain waking him up in the early morning hours, and mucus being passed on rising. He had been injected with emetine without benefit. There was tenderness over the descending colon, which felt thickened. The microscopical characters of the mucus were those of bacillary dysentery, and I isolated dysentery bacilli, which proved later to be Shiga's bacillus. Mixed sensitized Shiga and Flexner bacilli were injected in increasing doses up to 125 million. In the night following the first dose there was no disturbance and no mucus was passed in the morning, and two weeks later, when I last heard, he still remained free from all symptoms. All his stools were seen by his Indian medical attendant, and a number of them by me, so there is no doubt about the facts. This case is too recent to judge if the effects will be lasting, but the immediate result of the vaccine was most remarkable.

Conclusions.

In none of the above cases was anything beyond a moderate degree of reaction at the seat of the injection of the vaccine observed, while there was never any increase in the bowel symptoms or other toxic signs for a single day. The sensitization of the vaccines appears therefore to have fulfilled the expectation which led me to prepare them. Considering that the majority of the patients were sent from various parts of India to consult me after the failure of prolonged treatment of different kinds, and that the doses used were always small—probably much less than might be used with advantage in cases which resist the treatment—I think the results recorded in this paper may be considered as affording good grounds for hoping that, with further experience, this line of treatment will prove to be an important advance in dealing with intractable cases of chronic bacillary dysentery. Sensitized vaccines also appear worthy of cautious trial in quite small doses, but with shorter intervals, even in the more acute stages of the disease.

Reference.

[1] *Indian Medical Gazette*, November 19th, 1913, p. 434.

The General Council of the Seine and the prefect of police of the department have placed a bust of the late Dr. Emile Reymond in the operating theatre of the hospital at Nanterre, to which he was surgeon. It may be remembered that Dr. Reymond, who was a member of the French Senate and an enthusiastic airman, died from wounds received during a reconnaissance in the early part of the war.

A CASE OF CHOLO-HAEMOTHORAX.

BY

T. R. ELLIOTT, F.R.S., F.R.C.P.,
TEMPORARY CAPTAIN R.A.M.C.,
AND
HERBERT G. M. HENRY, M.D.,
TEMPORARY CAPTAIN R.A.M.C.

THE main interest of the case described in this note is that the patient made a relatively straightforward recovery, despite the unusual nature of his wound, and that it never became necessary to open the chest. The history of the injury was briefly this: A bullet fired by a sniper at short range went horizontally through the man's body, drilling a hole through each arm above the elbow, and passing through the chest behind the sternum at the level of the sixth costal cartilages close to the base of the heart. Its track through the left chest must have been fairly near to the surface, perhaps just grazing the heart, but in passing out through the right side the missile had gone deeper, injuring both liver and lung.

On the eleventh day the right pleural cavity was found to be full of fluid, the percussion note being dull almost to the clavicle. By an incomplete aspiration 40 oz. of dark brown fluid were withdrawn, and this appeared to be the usual fluid from a haemothorax. Dry pericarditis developed and a dry pleurisy on the left side. The physical signs soon indicated a reaccumulation of fluid on the right side, and on the sixteenth day a second aspiration obtained 60 oz. of fluid that was dark brown in tint, but yielded a yellowish-brown deposit containing bile. Ten days later 80 oz. were withdrawn, and this was now greenish-brown in colour and almost free from blood. The operation had to be repeated, and in all the patient's chest was aspirated five times on the right side, and 15 pints of fluid in the aggregate were withdrawn. This fluid was at first serum from clotted blood, but later it consisted only of pure thin bile. The last aspiration was on the forty-ninth day after the wound. In the ninth week he was well enough to walk freely about the ward, and he was then transferred to England. At the end of the fourth month he had almost completely recovered.

The pericarditis and dry pleurisy on the left side were accompanied by fever and a good deal of pain, so it may be inferred that they were due to a smouldering infection in the serous membranes close to the septic wound of entrance. When a haemothorax is infected with streptococci, it is often found that a dry pleurisy can be detected on the side opposite to the effusion. It is difficult to believe that a pleurisy developing under such conditions has any other cause than that by a direct spread of the streptococci from the infected collection of blood; yet such a dry pleurisy will ultimately vanish, and it is very rare for it to develop into an effusion and empyema. We may therefore assume that the entry wound in the left chest of this case had admitted a slight infection into the left pleural cavity. The rest of its track was clean. The repeated aspirations introduced no infection at a later date, nor did organisms escape with the bile that was so freely poured out from the wounded liver. This absence of infection by the latter route deserves notice, for it is certain that the bile must have been leaking directly from some large bile duct.

Wounds of the liver appear at autopsy as tracks through necrosed tissue, which is stained a bright chrome yellow by the effused bile; but this secretion rapidly comes to an end, for the dead cells are soon walled off by a barrier of fibrous scar tissue. A persistent leak of bile can only come from a hole in a duct, which is fed by the secretion of live cells further up the stream and away from the patch of injury. It is generally believed that microbes appear from time to time in the larger bile ducts, either in process of their excretion from the blood or by direct ascent from the duodenum. However, it is obvious that in the case here described the bile must have remained practically sterile, for bacteriological examination of the aspirated fluids never revealed the organisms whose inroad was feared. There was another reason which, as Sir George Makins pointed out to us, might have necessitated resection of a rib. The biliary fistula lay through a tear in the diaphragm, and so long as this opening led freely into the pleural cavity, and away from contact with any granulating surface, it seemed unlikely that the fistula would soon be closed. Resection of a rib might have been expected to bring the diaphragm into contact with the pleural wall, and ensure a rapid closure. As a matter of fact this was never needed, for the fistula closed spontaneously at about the sixth or seventh week.

Before recounting the full clinical details of the case, we may quote in this connexion some other examples of liver injury associated with wounds of the chest, which were observed by one of us in a large series of the latter wounds. The liver is often perforated by gunshot wounds without any obvious result. Since there is only the track of the bullet to suggest that the liver has been injured, and since one can never be sure in any individual case what was the position of the diaphragm at the moment when the wound was received, it is of little value to tabulate the number of men in whom the liver was supposed to have been wounded without ill results. A wound of the liver is either rapidly fatal from haemorrhage, or in itself is of little importance, for, thanks to the double blood supply, the breach in its tissue is soon healed, while biliary fistulae are neither common nor permanent.

In four men who died with a haemothorax infected by gas-producing anaërobic bacilli it was found that the liver as well as the lung had been wounded, and that the lacerated track through it was infected. But the probability is that the infection in all these four cases was carried in from outside by the entering missile, and that it did not originate with intestinal bacilli liberated from the débris of the torn liver. No facts have been observed which would suggest that a wound of the liver is peculiarly liable to be septic.

Two cases of external biliary fistulae were observed in the total series—roughly, 500 in number—of all chest wounds; and there were also two internal fistulae, of which one was the case detailed in this paper, while the second was a fistula into a bronchus.

CASE I.—*External Fistula.* (Under Captain W. B. Oliver.)
A sterile haemothorax on the right side caused by a bullet traversing both sides of a man's chest from left to right. From the exit wound in the fifth space, below and external to the right nipple, yellow bile began to leak on the tenth day. On the thirtieth day this ceased, and the sinus closed. There was no infection of the haemothorax, nor any alteration in its size. Three months after the wound the patient was reported by Mr. A. R. Anderson of Nottingham to have made a good recovery, with a practically normal chest.

CASE II.—*External Fistula.* (Under Lieutenant G. R. Colquhoun.)
A septic haemothorax caused by a bullet traversing the right base of the chest. About the seventh day there was a rapid increase in the displacement of the heart, and an exploration of the chest found offensive gas and pink pus with gas-producing bacilli. A rib was resected on the ninth day. No jaundice. On the thirteenth day bile began to leak from the empyema tube, which was a very short one, since the lung had expanded well at the operation. On the twenty-eighth day the leakage of bile had ceased, and the sinus was closed by the thirtieth day. The patient was transferred to England in good condition.

CASE III.—*Internal Fistula.* (Under Captain St. J. D. Buxton.)
Into the bronchus, closing about the tenth week. A septic haemothorax of the left side, caused by a shrapnel ball which traversed both sides of the chest. At some time after the wound the patient began to expectorate sputum mixed with yellow bile, but the precise date of this could not be ascertained because the symptom had caused a psychical obsession which made all the patient's statements on the question unreliable.

On the twenty-sixth day the empyema on the left side was drained; it contained streptococci and gas bacilli. Frothy sputum, with patches of bright yellow bile, and once or twice with fleshy masses of necrosed liver (proved by microscopic section), continued to be coughed up. Lieutenant-Colonel H. P. Hawkins reported from England that the expectoration of bile ceased in the tenth week. The empyema sinus was practically closed at the fourteenth week, and the patient then was rapidly becoming fit again.

CASE IV.—*Internal Fistula.* (Under Captain Hector Smith.)
Into the pleural cavity. This closed about the seventh week. The patient, while bending over to lift up a sandbag, was shot at short range by a sniper. He felt winded, and was carried away at once on a stretcher. No haemoptysis, either then or subsequently. The bullet passed through the flesh of the left upper arm, entered the left chest over the sixth rib in the nipple line, escaped at the same level on the right side, but an inch or more external to the nipple line, and then traversed the muscles of the right upper arm. Its track ran behind the sternum, and was at a much deeper level in the right chest than in the left.

3rd day.—Says that he felt sick, and then vomited a little blood. Otherwise no evidence of injury to stomach.

12th day.—At base hospital. No pain with food, and no sickness. Slight icterus in conjunctivae. The entrance wound on the left side was septic. Right chest dull up to first space in front, and heart's apex beat displaced two inches to left.

Aspirated in axilla. Intrapleural pressure = 0. The volume removed was 40 oz.; final pressure = − 6 cm. water. Clots of fibrin blocked the cannula and prevented complete removal of the fluid, which was of a dark brown coffee tint and sterile; it contained a few endothelial cells and lymphocytes and yielded a moderate secondary clot.

17th day.—Pericardial friction all over cardiac area and dry friction also in left axilla. Temperature upheld at 101°. Pulse 110. Aspirated in fourth space just below nipple. Initial pressure = 0, volume = 60 oz. Oxygen 500 c.cm. introduced, so that final pressure fell from −18 to −5 cm. water. Dark brown fluid, with yellowish-brown deposit containing fat globules and crystals (? tyrosin). Few old red corpuscles, and fairly numerous polymorphonuclear cells. Sterile.

26th day.—No icterus. No pericardial friction. Slightly tender and rigid in right hypochondrium. Temperature oscillating about 100°. Looks thin and ill. Heart apex beat displaced to mid-axilla. Aspirated 80 oz. greenish-brown fluid. Oxygen 1,100 c.cm. introduced so as to enable complete aspiration, and final pressure = −12 cm. Bright yellow deposit of bile; fairly numerous polymorphonuclear cells.

30th day.—Attack of pain in left axilla, and fresh signs of coarse pleurisy. Temperature 103°.

32nd day.—Aspirated. Initial pressure = −8 cm. Volume = 60 oz. Oxygen 500 c.cm., and final pressure = −20 cm. Green fluid, with greenish-yellow deposit; few polymorphonuclear cells. No secondary clot, and no coagulable protein on boiling.

35th day.—Heart apex beat still 1 in. to left. Coarse pleuropericardial friction.

40th day.—Aspirated. Initial pressure = −7 cm. Volume = 60 oz. A little oxygen used, and final pressure = −22 cm. Green fluid, as before. Thenceforward the temperature remained normal, after forty days of irregular pyrexia.

54th day.—Up and walking about. Heart apex beat almost normal. By *x* ray, only a little fluid at right base. Chest moving fairly well, but somewhat collapsed.

57th day.—Putting on flesh rapidly; transferred to England.

72nd day.—Irregular fever, lasting for eight days, reported by Dr. Ormerod; cause unknown.

120th day.—Discharged to convalescent home. Heart apex beat just internal to nipple. No sign of fluid at right base, but friction heard and movement impaired. Not yet actually fit for service.

Two or three subsidiary points deserve attention in respect of these cases. In the last example quoted the patient was not jaundiced, and he exhibited only the slight icterus of the conjunctivae that is frequently seen in the second week of an ordinary haemothorax; yet his pleural cavity was full of thin bile. The absence of jaundice was due to the relatively slow absorption from the pleural surfaces, when coated with a layer of blood clot. Indeed, this explanation applies equally to its absence in a haemothorax, as well as to this case of biliary fistula. Haemorrhage into the abdominal cavity leads at the end of the first week to a jaundice of far deeper tint, for absorption from the peritoneal surfaces is much more rapid than in the chest.

The colour of the biliary fluid in the effusion into the pleural cavity was green. Yet the deposit was yellow, and this was also the colour of the bile discharged in the bronchial fistula and in the two internal fistulae—a yellow almost as bright as that which is seen around a lacerated missile track through the liver. Bilirubin seems to have been changed into biliverdin by some process akin to that by which dissolved haemoglobin in the fluid of a haemothorax is often converted into a darker pigment resembling methaemoglobin.

The biliary effusion remained sterile. It is uncertain to what extent the properties of the bile itself acted as a check on the development of infection by other than organisms of the *Bacillus coli* group. But it deserves note that the bile did not cause much irritation of the pleural membrane. The polymorphonuclear cells which were found in the aspirated fluid were not more numerous than those that are often seen in an ordinary sterile haemothorax fluid, and they disappeared before the leak of bile had ceased. The biliary effusion yielded no secondary clot, either when allowed to stand after aspiration or after the addition of fibrin ferment to it; and it contained practically no coagulable protein. Therefore it had not been augmented by the addition of an inflammatory pleural exudate.

DR. W. G. GRACE, the famous cricketer, left estate of the value of £7,278, with net personalty £6,590.

AN IMPROVED METHOD OF LIFTING PATIENTS ON TO HOSPITAL SHIPS FROM BARGES AND BOATS.

BY

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CONSULTING SURGEON TO THE MEDITERRANEAN EXPEDITIONARY FORCE.

IN the war that is now being carried on at the Dardanelles it is practically impossible to deal with the sick and wounded ashore. It has therefore been found necessary to institute a fleet of hospital ships to which these patients may be transported at the earliest possible moment.

From the shore the seriously wounded, lying on stretchers, are brought out on barges or boats, from which they are hoisted on to the ships, which stand high out of the water.

In calm weather large wooden trays have been used, which are raised by cranes and deposited on the ship's decks, but in rough weather these heavy trays are a source of danger both to patients and attendants, and in any case are somewhat slow in operation, so that it takes a considerable time to unload a barge full of stretcher cases.

The new sling invented by Lieutenant-Colonel P. H. Falkner, R.A.M.C., officer commanding troops, hospital ship *Salta*, is an invention that is as simple as it is efficient. It can be used in stormy as well as in calm weather, and it accomplishes the work in a quarter the time taken up by the wooden trays.

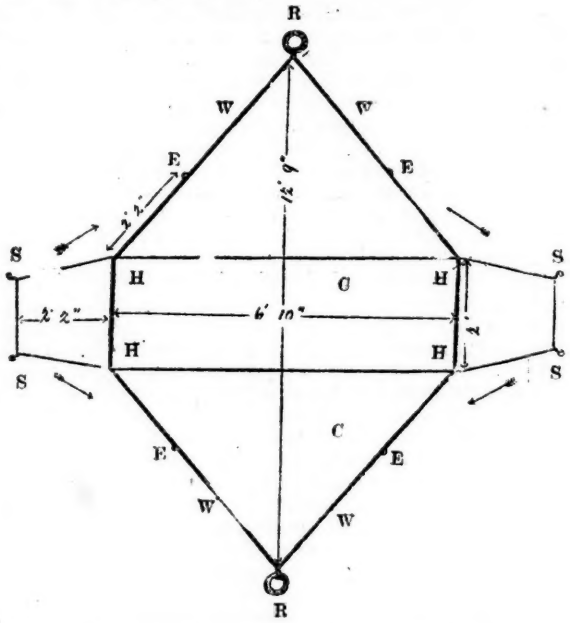

FIG. 1.—Lieutenant-Colonel Falkner's sling. Working diagram. C, "O" canvas (but any stout canvas will do). E E E E, Metal eyes to take spring hooks. H H H H, Holes in canvas sling (diameter 8 in.) for legs of service stretcher. R R, Metal rings (diameter 5 in.). S S S S, Spring hooks. W W W W, Wire rope (1 in. in circumference).

I have seen many hundreds of patients lifted on to the different ships, so that I speak from considerable personal experience. Unknown to those who were working the slings, I timed the transfer of stretcher cases from a trawler by one crane on to the *Salta*, and I made out that 16 cases were transferred and carried off to the wards in nine and a half minutes. We were then at Cape Helles, Dardanelles, and there was a north-east gale blowing.

So far as I am able to judge, this sling solves the question of our being able to remove wounded during the stormy weather likely to prevail during the winter if the cases can be loaded on to the barges and brought off to the hospital ships. It also solves another problem—that of delay in loading—which means great discomfort and danger to patients seriously ill or wounded, since not only can the work be done quickly, but the load to be lifted is so little that hand derricks can be rigged up in parts of the ship where there is no crane, and so the patients may be brought on at more than one place if necessary.

SUGGESTIONS FOR OPERATING THE CANVAS LOADING SLING.

By Lieutenant-Colonel P. H. Falkner, R.A.M.C.

For the rapid and efficient loading of wounded from boats and barges into hospital ships and temporary hospital ships, etc., it is most important that the working party should understand its duties. Each man in the team has only one duty to perform, and care is taken that he understands this, and does nothing else during the admission of patients.

The best results are obtained by detailing a team of four men for each barge or trawler; likewise we give four slings to each winch; the ship's crew attend to the deck above, and are not interfered with by our men until the patient is taken over. The procedure is as follows:

1. Two team "stretcher men" spread out the sling over the deck of the barge.

Bearers who come from the shore, etc., with patients, carry the stretcher and place it in position so that its legs will take the holes in the canvas sling provided to receive them. The canvas I used was a quality called "O" canvas, but any stout canvas will do.

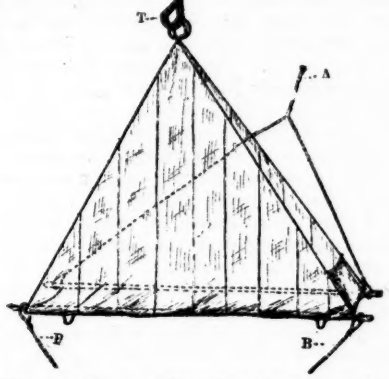

FIG. 2.—Winch hook. A, Hauling line to ship. B B, Hauling line to barge.

The team "ringman" lifts and approximates the two metal rings, R R, holding the wings of the sling well up, so that the two "stretcher men" may conveniently adjust the flaps by fixing the hooks S S S S into the rings E E E E, and ensure the stretcher legs being in their appointed positions (H H H H).

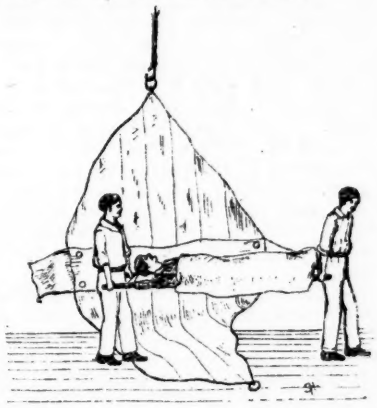

FIG. 3.—Removing stretcher from sling.

The "ringman" now seizes the winch hook, T, and attaches his rings, R R. He then signals to the deck that all is safe to hoist away. As the stretcher leaves the barge the "stretcher men" rapidly spread another canvas ready to receive another patient, who is already close by in the hands of the bearers. If the bearers are not yet in position the "stretcher men" may with advantage spread more than one sling over the offloading position—one over another.

The fourth man of our team receives the rolled up slings as they are rapidly passed downwards from the deck above by means of a hauling line.

2. When the winch swings the patient inwards over the ship's deck, two ward bearers, both facing forwards, seize the stretcher handles, taking the entire weight of stretcher as the winch rope slackens off. In this manner the wounded man entirely escapes the inevitable jar of a wooden cradle landing on the deck.

The ward bearers now remain in position, holding the stretcher at arm's length, until the rings are removed from the winch hook and the canvas sling is dropped to the deck—to enable them to advance across it.

The loading is very smooth and rapid; therefore every man of the team is, or should be if he is properly trained, working at full pressure. During rough weather the hauling lines shown in the diagram are always used. This means an extra trained man with the team below while the ship's crew control the inboard hauling line.

If for any reason there is little or no deck room on the barge, roll up the sling, with its metal rings thrown inwards towards the centre of the cloth, from one end flap to the other. By lifting *one* end of the stretcher the canvas may now be readily adjusted.

Or, again, it may be more convenient for the two "stretcher men" to simply lift the stretcher from the deck while the "ringman" spreads the sling.

To prevent any possibility of accident the condition of the canvas and wire should be closely inspected from time to time.

ON THE USE OF SOLUTIONS OF QUININE AS A DRESSING FOR INFECTED WOUNDS.

BY SIR JOHN TWEEDY, F.R.C.S.,

EMERITUS PROFESSOR OF OPHTHALMIC MEDICINE AND SURGERY, UNIVERSITY COLLEGE, LONDON.

I HAVE read with great interest the communication of Dr. Kenneth Taylor, Pathologist to the American Ambulance, Neuilly, published in the BRITISH MEDICAL JOURNAL of December 25th last, on "The use of quinine hydrochloride solution as a dressing for infected wounds." Dr. Taylor maintains that quinine solution (1) has high bactericidal properties, ten times as effective as carbolic acid in the case of *B. aërogenes capsulatus;* (2) is a strong antiferment, preventing the digestion of proteins and the consequent production of a medium favourable to bacterial growth; (3) forms no stable chemical combination with proteins, so that its activity is not greatly reduced by the presence of serum or pus; (4) is non-irritating and non-toxic.

Some years ago I published a paper on the treatment of diphtheritic ophthalmia by local application of solution of quinine.[1] The reasons which led me to employ quinine in some cases which I believed to be true diphtheritic ophthalmia were as follows: Cohnheim, Recklinghausen, and Stricker had shown that the principal changes which occur in traumatic inflammation of the cornea consist of the germination of the protoplasm of the stellate corpuscles and of the immigration of leucocytes from the adjacent capillary vessels; Binz and others had proved that quinine, whether given internally or injected subcutaneously, exerts a specific influence on the processes of inflammation by hindering or retarding the germination of protoplasm or by checking the vital amoeboid movements and consequent migration of leucocytes.[2] Binz's experiments also confirmed the statements of many independent observers that quinine possesses in a high degree the power of arresting putrefaction and fermentation.

Cases of true diphtheritic conjunctivitis are very rare in this country, and since the time I wrote the introduction of diphtheritic antitoxin has profoundly changed the treatment of diphtheria in all its manifestations. Antitoxin is of paramount importance, but I still believe the local application of quinine to be of the greatest service; and not only in diphtheria, but in all cases of infective and sloughing ulcers of the cornea, and in many, if not all, forms of infective conjunctivitis.

Dr. Taylor's experiments and observations supply an answer to a question which has often engaged my thoughts ever since Metchnikoff promulgated the doctrine of phagocytosis. In employing, on hypothetical grounds, quinine in diphtheritic ophthalmia I was largely influenced

by Binz's observation that quinine checks the migration of leucocytes in inflammation. Hence the important question, Does it also interfere with phagocytosis? Dr. Taylor has, I think, proved that it does not.

I may add that at first I used slightly acid solutions of quinine sulphate, but for many years I have used the sulphate and hydrochloride indifferently, and have not observed any difference in their action or efficacy.

REFERENCES.
[1] *Lancet*, 1880, i, pp. 125 and 282. [2] Loc. cit., p. 282 et seq.

TRAUMATIC IMPLANTATION OF EPIDERMIS IN TRACK OF GUNSHOT WOUND.

BY

LIEUTENANT-COLONEL G. H. EDINGTON, D.Sc., M.D., F.R.F.P.S.

AN example of traumatic implantation of epidermis in the track of a gunshot wound having lately come under my notice, I venture to record it, in the hope that, attention being drawn to the occurrence, other surgeons may be induced to keep a look-out for it in cases where a healed wound opens again and to record their experience.

Private ——, aged 20, sustained on July 12th, 1915, a gunshot wound through the left shoulder. He was helping to carry a wounded man out of the trench, and was stooping slightly, when a rifle bullet struck him in the back of the shoulder, and, passing forwards, emerged above the clavicle.

He rejoined his battalion for duty on August 8th. Two days later the wound "broke down," and he was attended by the regimental medical officer. On October 21st he again paraded sick, complaining of pain in the wound. Captain Pirie Watson, at this time in medical charge of the battalion, found both scars "very weak and bulging." He incised them and removed some "sebaceous material." Similar material has since been removed at intervals. On November 1st Captain Watson sent him for radical treatment to the field ambulance.

Condition on Admission.

The wound of entrance was situated over the supraspinous fossa, and about 2 in. (5 cm.) in from the point of the shoulder; the wound of exit was represented by a small scar, circular in outline, situated in the supraclavicular region, directly in front of the wound of entrance. The wound of entrance was open and granulating, and had the appearance of having recently been incised; there was scanty sero-purulent discharge. There was no visible swelling in the course of the bullet track; but on palpation hardness was distinctly felt in the anterior part of the track. There were no signs of acute inflammation.

On November 4th chloroform was administered. A probe introduced into the wound of entrance passed forwards and pointed in the scar of the exit wound. A curette passed alongside the probe removed some pale granulations, and more deeply (about halfway along the track) struck pomade-like material. The track, which was between 2 and 3 in. long, was laid open from end to end, and was found to pass under the outer fibres of the trapezius, necessitating their division. There was a very considerable amount of scar tissue, irregularly nodular and firmly adherent to the surrounding muscle fibres. During manipulation there appeared in the wound, not apparently from any particular spot, masses and flakes of dead-white material, exactly resembling desquamated epithelium mixed with sebaceous matter. The scar tissue was dissected out, a drainage-tube inserted and the wound sutured.

On cutting, after removal, into the masses of scar-tissue, one showed a small cystic cavity from which the contents had escaped. In two or three others the cut surface of scar tissue showed pinhead areas of sebaceous-like material, which could be picked out, leaving a clean cavity.

In the absence of facilities for microscopical examination, it seemed desirable to ascertain if possible whether the wound had at first been treated with paste; but, in answer to my inquiry, the patient was positive that nothing had been injected into the wound, and that external dressings had alone been used. I was therefore confirmed in my original opinion that the case was one of implantation of epidermis with subsequent proliferation. Theoretically, there is no reason why the carrying in of one or more fragments of living epidermis should not occur in a certain percentage of gunshot wounds. It is very likely, however, that in the majority of gunshot wounds the degree of trauma is sufficient to kill the epidermal cells.

It would appear that in civil life such implantation followed by the formation of a "dermoid" is usually the result of a trifling injury, so trifling that not only may there be no history of such forthcoming, but the scar be only seen after minute examination of the skin over the swelling. It would also be expected that the thicker the epidermis the greater would be the likelihood of its being carried into the deeper tissues. This condition obtains in the palmar surfaces of the hand and fingers, and every one knows that there is no part of the body more subject to trifling and unheeded injuries, and at the same time more likely to be the seat of "implantation dermoids." It is therefore interesting to note the occurrence of implantation in the case just recorded. The part struck was the back, a situation where the epidermis is much thinner than in the palm, and the injury, while perhaps slight as gunshot wounds go, was by no means either trifling or unheeded.

GUNSHOT WOUND OF THE SUPERIOR LONGITUDINAL SINUS.

A REPORT OF THREE CASES.

BY

A. W. NUTHALL, F.R.C.S., CAPTAIN R.A.M.C.(T.),
CASUALTY CLEARING STATION.

THE observations of Lieutenant-Colonels Gordon Holmes and Percy Sargent on injuries of the superior longitudinal sinus, recently published,[1] are so striking as to arrest the attention of all who are concerned—as neurologists, clinicians, or surgeons—with the care of cases of gunshot wounds of the skull. They have demonstrated that injuries of the superior longitudinal sinus give rise to a peculiar set of symptoms which constitute a definite clinical picture—briefly, paralysis with rigidity of the voluntary muscles, with a tendency to progressive recovery without contractures or other permanent nervous defects.

I venture to report three instances of this particular injury which have come under my notice during the past month. I was puzzling over the curious and anomalous symptoms presented by my first case when I received the BRITISH MEDICAL JOURNAL on October 4th (in France), and read therein their account of "the typical case," which might almost have been written of my patient. The coincidence was as remarkable as the paper was opportune and illuminating. My second and third cases died and *post-mortem* examinations were made. No. 2 was moribund on admission and died from haemorrhage; No. 3 succumbed after operation, there being extensive destruction of the brain as well as the injury to the sinus.

CASE I.

Private W. G. H. was shot in the head during the night of September 30th–October 1st. He lost consciousness at once, alarming haemorrhage occurred, and subsequently persistent vomiting. He was admitted to our casualty clearing station at 5.30 p.m. on October 1st, conscious, but in a very grave condition of collapse from loss of blood, blanched, restless, and with a rapid, feeble pulse. He said he was paralysed, and was found to be almost universally rigid. There was retention of urine, requiring the use of a catheter. There were two wounds on the top of the head, about 2½ in. apart, and on either side of the median line, the entry wound on the left side, the exit wound on the right of the mid-line and nearly an inch behind the former; they led to a perforation in the subjacent skull, situated just in front of the mid-point of the mid-line.

His mind was clear and his speech unaffected. There was no ocular paralysis; the pupils were equal and active. There was left facial paralysis of cerebral type. No other cranial nerves were affected. An examination of the fundi was not made. The arms were held tightly clasped to the body, elbows adducted to the sides and forearms flexed across the chest, hands clenched. Fingers, wrists, elbows, and shoulders were all rigid, increasingly so up the limb. He had no voluntary control over the arms. No reflexes could be elicited in the biceps or triceps. The abdominal muscles were fixed and took no part in respiratory movements; the umbilical and epigastric reflexes were absent. His legs were stretched out rigidly to their fullest extent, rotated in so that the patellae touched each other, and the feet were crossed; the feet were extended almost in a straight line with the legs, and turned inwards. He had no control over the legs. The knee-jerks were excessive; there was an extensor Babinski reflex; it was impossible to test the ankle-jerk.

Operation.

On October 2nd both wounds were excised, a flap made, and the perforating tangential fracture cleared of depressed fragments and bone débris. On picking out a sharp fragment impacted in the dura, it was found to have penetrated and to lie in the longitudinal sinus just under the edge of the bony defect. A flooding haemorrhage from an extensive ragged wound of the sinus, and of large venous trunks on both sides, was only arrested by plugging with gauze; no other method was suitable under the conditions. The flap was sutured, and drainage established through the excised posterior wound. A subcutaneous saline infusion, containing adrenalin 1 in 40,000, was given at once. Although almost *in extremis* from loss of blood, he rallied well, and was soon out of danger. The gauze was gradually removed, and finally extracted at the end of a week. The flap healed at once, but some suppuration, finding issue through the posterior wound, persisted up to the time of his transfer from my charge.

After-History.

Shortly after the operation urine was passed into the bed; in the evening the catheter was required. During the next fortnight he frequently wetted his bed; he explained that he could not wait once he felt the desire to empty the bladder. In the latter part of his stay here he had satisfactory bladder control.

On the third day after being wounded it was noted that "at times the muscles of the thighs relax, so that the knees can be flexed passively." The fingers and wrists were also much less rigid, especially the left.

On the fourth day his general condition was undoubtedly improving. There was some power of voluntary movement of the right hand and fingers (similar to athetosis), and he could move the right arm away from the body, but rigidity was present all the time and impeded these efforts; all passive movements were effected against resistance, the extensor muscles—for example, the triceps—increasing their tonic contraction against movements. Traction on any group of muscles appeared to stimulate them to a slow, vigorous contraction. The right shoulder was more rigid than the elbow, and the elbow than the wrist. The left arm was more definitely paralysed than the right in that there was no voluntary control at all over it. The rigidity was much less marked in this arm, except in the shoulder, which was as much, or even more, fixed than the right. The abdominal muscles were firmly contracted. No abdominal reflexes were present. The legs showed very little improvement. He complained of pain, "cramp," in the adductors of the thighs. The degree of rigidity of the joints diminished according to their nearness to the trunk, the ankles being quite fixed, the knees and hips progressively less so. It was now possible to flex the knees and hips forcibly and so allow him to lie comfortably on one side or the other alternately.

On October 5th, the fifth day, flaccid paralysis of the left arm was present, except in the shoulder, the pectoral muscles being very rigid. This flaccidity of the left arm became more obvious, as it persisted throughout and showed no signs of improvement, while progressive improvement occurred elsewhere. In conjunction with the left facial paralysis it remained as a partial hemiplegia.

The rigidity of the right arm cleared off rapidly, there being none present on the seventh day. Voluntary power over the right arm was only slowly regained, and only to a partial degree, the movements of the limb being markedly ataxic on the twenty-first day, coarsely inco-ordinate excursions of the arm occurring on attempts to touch any object with the index finger. He was able, however, to hold a cigarette on the seventh day, and to feed himself on the twenty-first.

The rigidity of the legs diminished much more slowly; the hips became relaxed the earliest, the knees about a week later, but some stiffness of the ankles persisted throughout. A very limited amount of voluntary control over the legs was regained. The knee-jerks were excessive, and an extensor Babinski always present. Ankle clonus was first noted on the seventh day; it became very much less marked subsequently.

Sensory changes were noticed to correspond to, and appeared to depend on the degree of, the paralysis and hypertonus of the muscles; they cleared up *pari passu* with the recovery of voluntary control and the disappearance of the rigidity. The sense of position was lost, nor was there appreciation of passive movements of the joints; thus, he could not tell whether the legs were crossed or the knees were being flexed; when his eyes were closed he could not say what was being done to the fingers, wrists, or elbows. The sensibility of the skin to light contact was present throughout, but touch stimuli were delayed or not correctly localized. Heat and cold were not tested. The value of subjective information of this nature is to be discounted by the very desperate condition of the patient at the time; later, when he was out of danger and well on the road to recovery, the sensory changes were confined to loss of sense of position and appreciation of movement about the ankles and legs, and there was a marked improvement in this respect when he left us.

On the twenty-first day he was evacuated to the base; I have no further information about his progress. He then had left hemiplegia (face and arm), and considerable muscular wasting. There was a certain amount of control over the right arm, but its movements were feeble and very ataxic. He was still almost helpless, although there remained only slight rigidity of the legs and ankles. The wound of exit was suppurating, as if there were still a foreign body (? gauze) beneath the scalp.

CASE II.

Private F. H. was shot in the head on October 16th. He was received by us on the 17th, comatose and moribund, dying two hours after admission. He was not noticed to have any rigidity by the receiving officer.

Necropsy.

Post-mortem examination showed a wound 3 in. long transversely across the mid-line of the vertex. There was a depressed gutter (tangential) fracture, with very little loss of bone, situated exactly over the sagittal suture; a fissured fracture extended from it downwards and outwards nearly to the left external angular process of the frontal bone. A fragment of the inner table, about 1 in. square, was separated and depressed on to the sinus, and a small, sharp piece of bone had been driven into the sinus. There was a slit-like tear in the dura, about an inch in length, at right angles to the mid-line on the left side and extending across the longitudinal sinus as a laceration of its roof. The wound was situated at the junction of the middle and anterior thirds of the sagittal suture. There was no blood clot in the sinus. The margins of the precentral and superior frontal convolutions of both hemispheres were severely bruised—that is, discoloured by haemorrhagic exudation. The frontal and precentral venous trunks showed up prominently on both hemispheres as purple, thrombosed, engorged vessels, with congestion of the convolutions bounding the sulci.

In this case the brain showed a localized contusion which might easily have been recovered from. Death was probably due to haemorrhage from the longitudinal sinus, or to shock.

CASE III.

Sergeant H. E. H. was shot in the head on October 24th. He was received by us on the 25th quite unconscious. The pupils were equal and active; there was no ocular paralysis. There was general rigidity of the limbs; the arms extended by the sides of the body and rotated in; the right was less rigid than the left, allowing the passive movements without much resistance. The legs were extended and rigid, the feet turned in (but the legs were not rotated in). The knee-jerks were excessive; an extensor Babinski and marked ankle clonus were present. Urine was passed into the bed. A wound 3 in. long, through which brain matter was extruding, was present at the junction of the anterior and middle thirds of the mid-line of the head; it was transverse in direction and mainly on the left side. An operation was carried out within two hours of admission. A tangential perforating fracture, with considerable loss of bone, was exposed; there was extensive destruction of the underlying brain by deeply indriven fragments of the inner table. There was blood clot in the mesial angle of the bony defect; in clearing this out, free haemorrhage from the longitudinal sinus occurred. A crown of bone was removed from in front, and a perforation from which the blood poured was closed by a suture. A drainage tube was placed in the cavity and the wound closed. He did not rally after the operation, but quickly became worse, and died four hours later.

Post-mortem Examination.

The lacerated wound of the dura mater was situated over the left superior frontal convolution, in which there was a large ragged cavity. The superior longitudinal sinus was torn completely across; *ante-mortem* blood clot filled the sinus for three inches behind the wound. The four main venous trunks—frontal, pre-central, post-central, and occipital—stood out prominently on both hemispheres as purple, swollen, thrombosed vessels, giving an appear-

ance of intense congestion to the greater part of the upper portion of the brain. The left prefrontal venous trunk had been destroyed.

Holmes and Sargent emphasize the favourable prognosis of injuries of the superior longitudinal sinus, but their "experience has shown that the results of surgical interference have been extremely unsatisfactory." I believe that in my two cases it would have been better to have confined the interference to strictly conservative measures. My first case very nearly died after operation; the end of the second was probably hastened by the operative interference. In dealing with a case presenting symptoms of "the longitudinal sinus syndrome" I am inclined to think that the surgeon should hold his hand until and unless the arrest of haemorrhage or the relief of definite compression is called for; in other words, there should be no interference.

REFERENCE.
[1] BRITISH MEDICAL JOURNAL, October 2nd, 1915.

A NOTE ON WICK DRAINS.

BY
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THE ordinary drain or "plugging" of folded gauze takes a certain period of time to make. When the gauze is at all hard or its fibre coarse, partially glazed or mercerized, as is notably the case with some of the American gauzes, the difficulty of folding is increased. Machine-made plugging is expensive, and the sizes to hand are not always those required. It occurred to me that at this time, when large quantities of plugging are required for use with hypertonic or other treatment, or for stopping a secondary haemorrhage, it would be advisable to use some form of cheap lamp-wick, but the woven varieties are rather closely knit, and the twisted varieties are apt to be unmanageable with a probe. Some of the wicks sold do not absorb water.

A simple solution of the problem, apart from constructing a machine for the purpose or adapting a knitting machine, is to utilize a child's knitting reel with which reins or "cats' tails" are made. Three pins to the reel seems to be better than a larger number, but if a more truly circular and tubular wick is desired a larger number may be used. In this case the product is either closer in texture or unduly large. The illustration shows a reel of convenient size, the drain being ½ in. in diameter; other useful sizes are ⅜ in. and ¼ in. in diameter respectively. These three sizes are made by employing reels of the following sizes in inch measure.

Size of Reel.	Diameter of Wick.		
	½ in.	⅜ in.	¼ in.
Height	1	1¼	1¾
Outside diameter ...	2	1½	1¼
Diameter of hole ...	1¼	⅛	⅛
Side of triangle	1½	⅞	⅝
Size of cotton	2	4	10

In this table the only important measure is the distance between the feet of the (equilateral) triangle formed by the pins, because on this depends the size of the stitch in the tail. The other measurements merely indicate the sizes of reels convenient to work with. Any reel large enough to take the triangle, and having a hole large enough not to compress the tail will do. Any kind of pin or tack will answer the purpose, but a convenient thing to use is a full gauge, ⅝ in., brass escutcheon pin, sold by most ironmongers.

The cotton used is Alexander's four-thread knitting cotton (bleached), and the sizes to correspond with reels of the above-mentioned measurements are No. 2 (thick), No. 4 (medium), and No. 10 (thin), the approximate diameters of these threads being ⅛ in., $\frac{1}{16}$ in., and $\frac{1}{32}$ in. (the latter one *plus*). This cotton is a smooth, loose twist of four strands, which does not tend to fray out, and is lissome and absorbent. Any soft fibred cotton will do, but for each size there is a corresponding size for the sides of the triangle, if one is to obtain a tail of the right body and tension—namely, one in which the mesh is open and the strands do not fall and cling together. The cost at retail price of the cotton mentioned is 1s. 2d. the ½-lb. hank, for all sizes. Each hank makes:

Of No. 10 (thin), 130 yards of wick; time 36 hours.
Of No. 4 (medium), 42 yards of wick; time 9 hours.
Of No. 2 (thick), 22 yards of wick; time 5 hours.

The thick size is cut into lengths of 6 in. and 10 in., the medium into lengths of 4 in. and 7 in., and the small into lengths of 3 in. and 6 in., the loose clippings removed and the ends caught up into a single knot, or this may be done in the process of knitting, and adds about four hours to the total time for the above-mentioned quantities. The thick variety is more suitable for use as plugging than as a drain, and for drainage one should use two or more strands of the medium instead of one of the thick size.

Convalescent patients or children can readily make large quantities of these drains and thereby save a good deal of the nurses' time at present taken up in folding gauze. There are no raw edges, the mesh is open, and the absorbing power great, partly owing to the choice of material and partly to the size of the stitches. The twist in the cotton produces a high degree of capillarity, and the attraction between the films in the meshes is considerable.

LOCAL TREATMENT OF SUPPURATING SKIN LESIONS AND INFECTIONS.

BY
GEORGE HOME, M.D.EDIN., MAJOR N.Z.M.C.,

SINCE entering upon active service I have been confronted with the treatment of a considerable variety and a large total number of suppurating abrasions, ulcers, boils, and localized infections of the skin. In addition to other unfavourable conditions (for example, heat and dust) my subjects have been mostly unable or unwilling to give mechanical rest to the injured part; these sores have frequently, therefore, been very obdurate.

After several months' trial of permutations and combinations of dressings—wet and dry dressings, with antiseptics and without, antiseptics without dressings, open air, and direct sunlight—with ultimate, but, to my mind, unreasonably slow healing, the following method was arrived at, and for the last three months has continued to prove the most rapidly successful and satisfactory of any. Its only requirements are 3 per cent. cyanide gauze and adhesive plaster, occasionally a pair of scissors, and (for boils) a scalpel. No solution or other antiseptic is used. The suppurating surface is gently wiped dry with a clean piece of cyanide gauze; another piece, only slightly larger than the actual sore and about 6 to 8 ply in thickness, is laid on dry and fixed with strips of zinc oxide or other adhesive plaster, imbricated so as to make a watertight dressing. It is very important to cover the gauze completely, and the thickness of the gauze dressing varies with the amount of probable discharge. This dressing may be left untouched for one, two, three, or four days, according to indications. If comfortable, with no lymphatic evidence of absorption, the less often it is disturbed the better. Subsequent dressings are done exactly in the same way as the original.

A corporal came to me with a suppurating sore, 2 inches square, on the back of the left wrist, which had refused to heal for three weeks. I wiped it clean with cyanide gauze, making it bleed slightly. There being no water or solution handy I put a piece of dry gauze on it, covered it carefully with adhesive plaster, and told the man to report

next morning. He did not return until four days afterwards. The dressing, which had not been disturbed, came off easily, the sore was perfectly covered with a soft bluish-white skin, and there was no further trouble.

Reflection on this result led me to the conclusion that this form of dressing (1) gave the best surface protection to the damaged part, (2) contained sufficient mild antiseptic to inhibit further bacterial growth on the skin surface, (3) allowed of the production and maintenance of bactericidal and healing serum locally in the sore, and (4) that for this last reason it was important neither to wash the part nor to put the gauze on wet. Such procedure would have spoilt the biological properties of the serum, and would have interfered with the nourishment of the healing cells, especially if any stronger antiseptic had also been used.

It is important to cover the gauze completely with the adhesive plaster—firstly, to give accurate fixation and mechanical protection, and secondly, to retain in the gauze moisture sufficient to keep the serum at normal consistence and to prevent the dressing sticking to the raw surface.

It is, of course, necessary to get the whole infected area completely exposed for the dressing—that is, to remove all crusts and scabs and overhanging cuticle, as in suppurating blisters. At first I felt impelled to use a touch of surface antiseptic (iodine tincture), but a parallel series of tests of similar cases convinced me that it was better not to annoy the sore. I also have a conviction (perhaps begotten of theoretical considerations) that a covering film of fresh blood on the sore is an initial advantage.

Applying a similar principle to boils, I open each, whatever its stage, with a Paget's knife, taking care to cut into the induration also; gentle pressure is applied to get out only what pus will come easily; the surface is dry-wiped and then dry-dressed exactly as already explained, preferably with a film of fresh blood over the boil. At first the gauze pad is made fairly thick and, if there is much pus, renewed twice a day. There is very little pain after the initial dressing and the core usually comes out on the third or fourth day. Before the first and after the last dressing I paint the skin for some distance around the boil with iodine tincture to diminish the chances of spread of local infection.

My subjects are vigorous young New Zealanders on active military service, whose blood and tissues are therefore very capable in the production of antibodies. But I consider that the idea might be applied to chronic ulcers, to so-called "eczemas," and to other suppurative and exudative skin lesions met with in ordinary practice.

It is therapeutically sound to let bacteria "stew in their own juice" when conditions permit, and it is quite easy for a small wrong detail in treatment to upset the quality or quantity of the "juice" and to spoil its capacities both for devitalizing the infecting agents and for vitalizing the repairing agents. This spoiling may be done by diluting it or by desiccating it.

The middle course is Nature's own. She puts a dry hard scab on a healing sore that just sufficient fluid may collect under it to nourish the healing cells, and give it a tight hold that cannot be disturbed without disaster before healing is complete.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

COMPRESSION OF AORTA IN *POST-PARTUM* HAEMORRHAGE.

ON the night of October 28th I was called to a 2-para, aged 28, who had been three or four hours in labour. Her first labour, three years before, had been terminated with forceps under chloroform. The os was completely dilated and retracted, and the head about half through the brim. The pains were strong and frequent, but little, if any, progress was made during half an hour.

I put her under chloroform, using Duncan and Flockhart's, by the open method, but not to the surgical degree, applied Simpson's long forceps, and delivered, with comparatively little difficulty, a living baby. The uterus contracted well under manual pressure, but as I failed to express the placenta by the Dublin method, and as distinct pulsation in the cord indicated adherent placenta, I introduced my left hand—well asepticized—and found a small surface adherent right up at the fundus. This I separated easily, and brought away the placenta in front of my hand. I compressed the uterus manually for some fifteen minutes until firm contraction resulted, and then proceeded to wash my forceps and hands. In ten or fifteen minutes the nurse called to me and I found the uterus much distended; I expressed a regular torrent of blood, and massaged the uterus till firm contraction resulted. I made the nurse keep up the manual pressure while I gave a hypodermic injection of ergotinine citrate (1–200 gr.), and then proceeded to compress the abdominal aorta against a lumbar vertebra in the "crutch" formed by the flexed index and second fingers of my left hand, the arm being fully extended, and made the pressure absolute by the tips of the two corresponding left fingers against a lumbar vertebra close to and in front of the right. The aortic pulse was feeble, irregular, and intermittent, the patient lying in a faint with lips and surface white and exsanguine. I had sent for Dr. Hutchinson to give normal saline, and he instilled about 8 or 10 oz. into the areolar tissue beneath each breast. I kept up pressure till the patient rallied, and in about half an hour gave her some warm milk; I stayed another half-hour, but there was no return of haemorrhage.

The patient recovered without a single bad symptom, suckled her baby, and resumed her household duties in twelve days, but I am morally certain that the compression of the aorta was the chief factor in saving her life.

East Ham. C. STENNETT REDMOND, M.D.

FOREIGN BODIES IN RECTUM.

THE following case is of interest, owing to the fact that it was the second occasion on which the patient had swallowed the foreign bodies, and, in my opinion, they had not been introduced from below. The patient, a female aged 19 years, not pregnant, informed me that she was suffering from constipation and had taken purgatives, but with no definite result, chiefly due to pain in the rectum during the act of defaecation. I gave her calomel gr. v, and directed her, if it had not the desired result, to remain in bed and send for me. The next day I was called to her house, and, before examining her, I elicited the following history. The bowels had not moved for fourteen days; she had swallowed during a day and night, about fourteen days before, two full boxes of wooden matches (safety). I was amazed to be told by her that I would require to give her chloroform and remove them from the rectum, as a doctor had had to remove them in that way before. On examining the rectum with the finger I found it full of matches lying in all directions as far as my finger could reach; the finger when withdrawn was covered with blood due to the excoriations of the mucous membrane by the sharp end of the matches. I removed the matches—of which there must have been at least two boxes—after consideration, without an anaesthetic, as a moral lesson to the patient not to swallow highly indigestible substances in future.

Winchburgh. JOSEPH STARK.

IMPERFORATE HYMEN AND ABSENCE OF UTERUS.

I PUBLISHED a "case of complete atresia vaginae and absence of uterus" in the BRITISH MEDICAL JOURNAL of October 5th, 1901, and as such conditions are extremely rare, it is a singular coincidence that I should have met with another somewhat similar condition.

A girl, aged 18, was brought to me by her mother because she had never menstruated. She is a perfectly healthy, strong, and well-developed girl. I found an imperforate hymen. Examination under chloroform at the hospital revealed a strong thickened hymen, but the uterus was completely absent, although a thin whipcord extended from side to side of the pelvis.

Mirfield, Yorks. LESLIE J. MILNE, A.M., M.D.Aberd.

Reports of Societies.

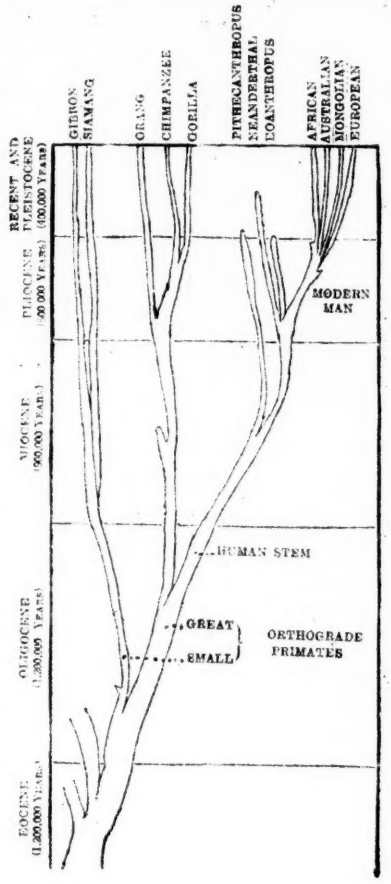
TREATMENT OF SYPHILIS.

AT a meeting of the Association of Registered Medical Women on December 14th, 1915, Dr. HELEN BOYLE in the chair, Dr. MARY SCHARLIEB, in opening a discussion on venereal disease with special reference to syphilis, said that the difficulty in obtaining treatment in the early and hopeful stages was due to a twofold plea—(1) that it tended to encourage vice; (2) that funds intended for the relief of the innocent sick were used. Many sufferers, especially women and children, however, were entirely innocent; the expense of treatment and maintenance in the later stages was infinitely greater, and untreated syphilitics might spread the infection. The recognition and treatment of syphilis were now assured facts since the introduction of the Wassermann test and of salvarsan, so that the excuse of prolonged and uncertain treatment no longer held good. Since salvarsan could no longer be obtained, kharsivan made in this country, and galyl, manufactured in France, had been found reliable. With regard to infantile mortality, investigation showed the number of cases of syphilitic infection—pre-natal and post-natal—to be great. As many children died in the six months before birth as in the first twelve months after birth, and the great majority of intrauterine deaths from the third month onwards were due to the *Spirochaeta pallida*. From evidence given before the Royal Commission on Venereal Diseases the most satisfactory form of treatment appeared to be as follows: The diagnosis having been established, either by finding the spirochaete or by the Wassermann test, salvarsan or one of its substitutes was injected intravenously; this was followed by inunction of a mercurial cream for ten weeks. A second intravenous injection of the arseno-benzol compound was then given, followed again by inunction for ten weeks; and both were repeated a third time. After this the Wassermann test should be repeated at intervals for two years. Dr. MARY JOHNSTONE said that in asylums the treatment of cerebro-spinal syphilis, if diagnosed early, was successful, that of general paralysis of the insane and tabes difficult, though injection of salvarsan relieved the lightning pains and gastric crises. It had to be remembered, however, that remissions occurred in general paralysis of the insane even without specific treatment; some patients were discharged as cured, but all died suddenly within a few months. Dr. KATE ADDISON said that statistics collected in skin departments showed that from 1.5 to 2 per cent. of the cases coming for treatment were syphilitic. Among 500 cases at the skin department of a children's hospital she had found no case of syphilis. Dr. HAZEL CUTHBERT described a case of possible delayed congenital syphilis in a boy aged 9. There was oedema of legs and face and intense ascites without albuminuria. The Wassermann test was positive. Dr. ELEANOR LOWRY, in speaking of syphilis of the throat, nose, and ear, said that syphilis, unlike tuberculosis, usually commenced in the epiglottis. Atrophic rhinitis was not as a rule syphilitic in children between 7 and 12. Secondary labyrinthine deafness with nystagmus and vertigo cleared up with antisyphilitic treatment, but congenital nerve deafness was generally incurable. Dr. HELEN WILSON said that the system of registration, which had been in vogue for 100 years, was unjust, unscientific, and unsuccessful. Early and efficient treatment was essential. Notification, though theoretically good, was not practicable. The Danish system of free and compulsory treatment had not diminished the incidence of the disease. Rather than apply compulsion to the unwilling it would be better to provide fully and helpfully for willing patients. Dr. ELIZABETH COURTAULD said that at the Lock Hospital three intravenous injections of salvarsan or its substitute were given at a fortnight's interval, and mercury was given by intramuscular injection and not by inunction. Mercury caused a remarkable increase in weight; one patient gained 7 lb. in a week. Mercurial treatment was continued for seven years. Kharsivan had been considered poisonous, but out of 96 cases treated, 84 had shown no reaction, 11 a slight reaction, and one a reaction up to 102°.

Reviews.

THE ANTIQUITY OF MAN.

THE purpose and scope of Professor ARTHUR KEITH'S new book are well indicated in its title, *The Antiquity of Man*.[1] In it the evidence which tends to put back the time of man's first appearance to a period much earlier than was until recently by any one supposed possible is examined and pronounced valid, but the contention which gives its special character to the book is that modern man, or at any rate, man with a brain case as capacious as the average of to-day, or even larger, existed in the middle pleistocene epoch, probably earlier. This may be said to be the purpose of the book. Its scope is very wide, for in the process of examining the evidence every specimen is described, in most instances very fully, and the conditions under which it was found discussed. This involves the study, first, of the evidence as to the authenticity of each specimen—some, owing to lack of accurate and trustworthy records, are under grave suspicion, or have to be rejected; secondly, of the geological evidence as to the probable age of the stratum in which the specimen was found; and thirdly, of the evidence afforded by the remains of animals found with the specimen, and of the character, whether less or more primitive, of the stone implements believed to be of the same epoch. A fourth line of evidence is afforded by the more or less primitive anatomical characters of the specimen, but the nature of Professor Keith's thesis in, roughly, the first half of his book, to some extent shuts him out from using it as evidence of antiquity.



This thesis is that modern man, modern in the form and capacity of his cranium, existed as early as the Neanderthal type, from which it has been assumed that he was evolved. Professor Keith does not now hold the view that Neanderthal man is in the ancestral line of modern man. He agrees with Dr. W. H. Duckworth that the race (or species) became extinct, and believes that it branched off at some early period from the stem from which modern man evolved; it took the wrong road and failed.

The general plan of the book is to recount the circumstances in which each specimen was found and its geological relations, to describe very fully its anatomical characters with the help of diagrams of the skull set within a framework of lines which bound the chief diameters of a modern skull of mean size, and finally to sum up the evidence, as to authenticity, antiquity, and anatomical characters. In this way we are taken through the stories of the long series of discoveries from those of

[1] *The Antiquity of Man*. By A. Keith, M.D.Aberd., LL.D., F.R.C.S.Eng., F.R.S. London: Williams and Norgate. 1915. (Demy 8vo, pp. 539; 189 figures. 10s. 6d. net.)

Neolithic men in this country, probably the contemporary of the pre-dynastic Egyptians, to Piltdown man (Eoanthropus Dawsoni), who lived either in the early Pleistocene period as Dr. Smith Woodward believes, or, as Professor Keith thinks, even earlier—that is to say, in in the Pliocene period. As to the actual date, it may be a quarter of a million years ago or half a million, but probably nearer the latter than the former, perhaps a million. This is a very wide margin, but the date, and even whether Eoanthropus was Pleistocene or Pliocene becomes of less importance if we accept the view which has the support of Sir E. Ray Lankester, that the subcrag flints of East Anglia and the eoliths of Kent are man-made, for then the beginnings of man must be put back to a geological period antecedent even to the Pliocene.

It seems that the school of thought which maintains that the modern type of man and the Neanderthal type existed on the earth together have proved their case, and have made it probable that the former expelled the latter from Europe, supplanting him so completely that the beetle-browed man became extinct. If it be admitted that the two types were contemporaries the consequences, as Professor Keith points out in a concluding chapter, are very far-reaching. He illustrates them by a genealogical tree from which we have made the accompanying simplified sketch. If, somewhere in the middle Pleistocene two types of men existed as different as Modern man and Neanderthal man, the fact argues a long antecedent period of evolution, long enough for the human stem to have branched into at least these two divergent types, and perhaps a third—Eoanthropus. Parity of reasoning puts back very much further the period, perhaps two million years ago, when the human stem separated from that which in the process of evolution has yielded the anthropoid apes and the gibbons. We are, in fact, confronted with another question—namely, when, if we ever have a complete tree, should it be said that the creatures in the human stem become endowed with brains which entitled them to be called man? For we must assume that the bigger brain preceded the skeletal changes.

Professor Keith has written a book of extraordinary interest which makes its appeal to the already large and, we believe, rapidly growing section of the public, who want to know how science is moving and to what ends, and is not satisfied to take its information at second hand, but wishes to learn from the expert. The book is one which only an accomplished anatomist could have written; it is full of anatomical facts and discussion. So far, therefore, the medical reader is in a better position to follow the argument than others, and it is very much to be commended to medical readers for several other reasons. One is that the enthusiasm of the author infects the reader, who at the same time has the conviction that the facts are recorded with scientific conscientiousness, even though the hypotheses founded on them may not always carry complete conviction. That this is the case Professor Keith freely admits when he says in his preface that he is convinced that the true solution cannot differ materially from that presented in the diagram here given, but that it "is only one of many [solutions]; time will show which is right." Another reason is that some of the most important finds have been due to the vigilance of amateurs who have closely watched excavations, even in such unlikely places as the small pit used by the farmer at Piltdown to get gravel to mend his cart road. How many other fragments of fossil man have been used to mend the roads elsewhere no one knows, but the medical reader of Professor Keith's book will learn to look on gravel pits with a more discerning eye than heretofore. A final reason is that the book lifts its reader out of the obsession of the war, and may help those inclined to despair of humanity to take a longer and, let us hope, a truer view.

The book is very well illustrated, by which we do not mean only that the number of illustrations is large—the list enumerates 189, many of them consisting of more than one drawing—but that each really elucidates the statements or arguments in the text, and all appear to have been specially drawn for the book by Dr. Stanley Beale and Mr. William Finerty. The publishers deserve a word of praise for the pains taken to get each drawing in or very near the place where it is discussed and described, but they ought to have supplied a better index and may, we hope, yet do so in another edition.

PUBLIC HEALTH.

English Public Health Administration[2] is one of the series of studies in economics and political science issued under the direction of the London School of Economics. In his preface the author, Mr. BANNINGTON, states that the aim of the work is to provide a survey of the methods of public health administration, and thereby fill a gap which has heretofore existed, since public health literature has concerned itself only with either purely formal statements of Acts of Parliament supplemented by annotations and comments, or with the practical application of technical knowledge. In this he has been successful. The work is an exceedingly useful addition to the literature of public health, and will be most helpful to those who, having entered the public service possessed of a general knowledge of the statutes, are admittedly ignorant of the application of legal powers to local and special conditions. The lucidity with which the author has treated an intricate subject is very creditable, and certain criticisms and strictures will be heartily endorsed by those who have experience of the use of an imperfect machine, complicated by additions and crippled by gaps. The desire of the author to have a great consolidating and simplifying Act, which would abolish the riot of Acts of general application, adoptive Acts, private Acts, orders, by-laws and regulations, is one common to all concerned in the administration of public health departments. Difficulties are, however, put in the way of such consolidation by the fact that health problems are largely governed by scientific and social investigations which are still incomplete, and that experience concerning the proper functions of county councils as opposed to borough and district councils is still immature. Few, if any, public health officials will disagree with the author's strictures on private slaughter-houses. It can be positively asserted that the loose way in which the public meat supplies are supervised is a menace to national health, owing to the defective legislative control of premises where nefarious acts can be conducted with little risk of detection. The chapter on finance is to be especially commended. It is a clear exposition of a subject still for many public health officials shrouded in mystery. We thoroughly agree with the passage in the work devoted to security of tenure of sanitary officers. The capricious attitude of some local authorities towards their officials is well known, and existing so-called security of tenure may mean little. In that part of the work devoted to a discussion of the staff, the reactionary suggestion is made that the administration should be duplicated, the one department being that of the medical officer of health, and the other that of the sanitary inspector. Efficiency in any municipal department can be obtained only where there is one chief official—the chief of the public health department must be the medical officer of health. The work of the sanitary inspector is concerned with the control of conditions inimical to health, and that statement, which none can dispute, is sufficient to convince any impartial person that the final departmental consideration of such conditions must lie with the medical officer.

THE CANCER PROBLEM.

INTO his book on *The Cancer Problem*[3] Dr. W. S. BAINBRIDGE has collected notes on practically every piece of work on cancer published within the last ten or fifteen years. He has been a studious reader of everything connected with cancer, and he has travelled much in Europe, visiting most of the clinics and laboratories where cancer research of any description has been done, gaining opinions from individual workers of their own work, and undoubtedly criticisms of the works of others. Much of the work and many of the opinions are of ephemeral value, some, perhaps, may be landmarks in the history of the research, but whatever has been done or said—good, bad, and indifferent—finds a place in the pages of the book. There is very little discrimination attempted by the author, and no one not conversant with the subject would be able to winnow the wheat from the chaff, but the book

[2] *English Public Health Administration.* By B. G. Bannington. Introduction by G. Wallas, M.A. Studies in Economics and Political Science, edited by the Hon. W. Pember Reeves, Ph.D., No. 46. London: P. and S. King and Son, Ltd. 1915. (Demy 8vo, pp. 349. 7s. 6d. net.).

[3] *The Cancer Problem.* By W. S. Bainbridge, A.M., Sc.D., M.D. New York: The Macmillan Co. 1914. (Med. 8vo, pp. 552; 28 plates, 12 figures. 17s. net.)

serves as a fairly orderly summary of the main papers that have been published down to the time of its publication, and the student may find it a convenient place in which to look for an account of researches that otherwise would be difficult to unearth from bibliographies.

NOTES ON BOOKS.

THE tenth edition of Mr. T. W. SANDERS'S *Roses and Their Cultivation*[1] is well illustrated by pictures in colours and in the text. By the inexperienced it will, perhaps, be most appreciated for its directions for pruning, which are well illustrated by very clear diagrams. The chapter on the diagnosis and treatment of diseases of roses is also very practical, but the book suffers for want of a better index. There is a very copious and useful table of varieties, giving the date of their introduction and short notes on their character and peculiarities, but without more knowledge than an amateur newly taking up rose-growing can be expected to possess he may have some difficulty in finding what he wants.

In the collection of papers by the late Canon BARNETT and Mrs. BARNETT, under the title *Practicable Socialism*,[2] we have brought before us the chief points of the work begun in St. Jude's parish during the years that Canon and Mrs. Barnett laboured there. We are familiar with their desire to give education—that is, a wider use of eyes and ears, and a wider capacity for enjoyment—and cordially agree in the need for hobbies. Many of the suggestions made years ago have become realities now, such as vacation schools, travelling parties of schoolboys and schoolgirls; but many suggestions, notably in connexion with the welfare of the children of the State, need further development. The book should be read by those interested in the lives of their poorer neighbours.

A liberal selection from the works of British poets, from Chaucer to Thomas Hardy, has been made by Mr. BEAUMONT, and published at a wonderfully cheap price by Messrs. Jack.[3] It contains, we are told, nearly 60,000 lines; it embraces both lyrical and non-lyrical poetry, excluding only the dramatic. Great care has been taken to employ trustworthy texts; a glossary for Chaucer and the Scottish poets has been provided. Poetasters as well as poets are represented in the selection; the paper and printing are excellent. The book may be cordially recommended to the patronage of the general reader.

MOTOR AMBULANCE DEVELOPMENT.

BY H. MASSAC BUIST.

WHILE the French perforce continue to use all manner of vehicles for motor ambulance work, mostly of varieties quite unsuitable for it, as far as our endeavour at the front is concerned, the British Red Cross organization has settled down to the use of thoroughly standardized types of ambulances; therefore we are getting what are really remarkably satisfactory results now that the variety of types and makes has been reduced to the minimum, and that the chassis, as well as the ambulance bodies, are modern in design.

While it has not been eliminated, nevertheless overhang has been enormously reduced, and suspension vastly improved. When wounded may have to be dealt with by the thousand, and in a race against time, the motor ambulance must of course continue to be a machine of the compromise sort.

It is rather in those varieties which are being acquired for service at home that one sees new ideas tried out nowadays when we have other things to do than experiment at the front. For example, one of the latest additions to the Hampshire Automobile Club's fleet of ambulances is equipped with a body designed by Captain R. W. D. Leslie and Captain G. A. Child, both of the R.A.M.C., as the result of their experiences in removing the wounded. The coachwork has been carried out by the Southampton coachbuilding firm of Andrews Brothers. The body is fashioned of three-ply wood, and is canvas topped, there being four hopper windows on each side, such as are often used in hospitals, which when opened allow air to enter only in an upward direction. The driver is completely protected by a canvas cowl and side curtains, to which hopper windows are also furnished. The communicating door folds back over the driver's seat, and is furnished to enable orderlies to pass through into the interior of the car. This door has a ventilator and a window. In hot weather it can be left open. A padded collapsible seat is provided in the gangway for the orderly in attendance, and he has ample room to attend to the patients occupying each of the four cots. The locker containing medical requisites is ingeniously accommodated over the driver's head, the entrance to it being in the interior of the ambulance.

In thirty seconds both sides of the interior can be converted from accommodating lying down to sitting cases, for which latter ample leg room is provided. An ingenious use of levers, whereby the seats are automatically raised into position as the lower stretcher trays are folded back, eliminates the fault of low seats for this service. This and the excellent padding arrangements are features of design too generally overlooked in a war in which the majority of the wounded to be transported are sitting cases. One ingenious weight-saving contrivance, which besides ensures the step being up when the car is loaded, is that whereby the tailboard, when lowered, forms the step at the rear of the ambulance. The back doors are detachable and can be folded against the sides of the ambulance, so that in hot weather the whole of the back is open.

An interesting contribution to the trailer-ambulance problem is brought forward in the ambulance-caravan trailer designed by the Steel Trucks Company, of 18, College Street, Lambeth, designed to be capable of being run up to thirty miles an hour with comfort to the passengers as a trailer to any motor vehicle, and to be produced at a cost of £150. Tubular steel is largely used in the construction, the aim being lightness combined with rigidity. It accommodates four stretcher cases and can be converted to take sitting cases. The top end of the vehicle is furnished with a tank for water. Arrangements are also made for fitting, as an extra, an acetylene cooking apparatus with all facilities for cooking for twelve persons. The standard equipment also provides space for rifle lockers and for men's kits. When the four Government regulation stretchers are in position there remains a 17-in. gangway for the orderlies.

Good work has been done lately by the Scottish branch of the Red Cross Society in providing a number of motor ambulance boats for service in the East.

MEDICAL CARE OF SCHOOL CHILDREN.

THE annual report for 1914 of the Chief Medical Officer of the Board of Education[1] surveys the whole field of the preservation of child life and the care of the health of school children.

THE SCHOOL MEDICAL SERVICE.

The work of the service has been seriously affected by the war. Doctors and nurses have been taken away from the service of the children to that of the fighting men. The report states that so soon as the requirements of the army were known, the board gave every facility for the arrangement of the work that would facilitate the freeing of as many of the medical staff as possible. The board issued a circular intimating what part of the school work was in its opinion essential and should be regarded as a first charge on the time of the school medical staff, and stating that the board would continue to pay grants at the present rate in relation to expenditure in all cases where the arrangements made were in the board's opinion reasonably satisfactory, regard being had to all the circumstances. The intimation of the Local Government Board that all fresh expenditure was to be curtailed has checked the progress of new work; various proposals for the establishment of school clinics, for example, have been stopped on this account.

What loss the school medical staff has sustained owing to war conditions the report does not state. But at a recent meeting of the Central Medical War Committee

[1] *Roses and Their Cultivation.* By T. W. Sanders, F.L.S., F.R.H.S., etc. Tenth edition. London: W. H. and L. Collingridge. 1915. (Post 8vo, pp. 213; 39 plates, 54 figures. 3s. 6d. net.)

[2] *Practical Socialism.* By (the late) Canon S. A. Barnett and Mrs. S. A. Barnett. New series. London: Longmans, Green and Co. 1915. (Post 8vo, pp. 352; 1 illustration. 6s. net.)

[3] *A Book of English Poetry.* Chosen and edited by G. Beaumont, M.A. London: T. C. and E. C. Jack. 1915. (Med. 8vo, pp. 583. 3s. 6d. net.)

[1] The Annual Report for 1914 of the Chief Medical Officer of the Board of Education. London: Eyre and Spottiswoode. and Wyman and Sons. 1915. (Pp. 309, price 1s. 3d.) [Cd. 8055.]

information was given that out of a total medical staff of 1,234 doctors in England and Wales, a total that includes men over military age and women, no fewer than 304 were on military service. That is a goodly number, but it is probable that at the present moment it is larger. The value of the work of the school medical service in times of peace is undoubted, and its influence on the national well-being incalculable. To this must now be added the value of this staff as a reserve of doctors who may be called upon for national service in an emergency.

The institution of special researches by the school doctors has been urged on many occasions. For this year Sir George Newman suggests that the subject for inquiry should be "Malnutrition." The subject is well chosen, for it would appear that there is more money in the hands of the working-class population at this time than ever before; under these conditions it will be of particular interest to observe the effects of this increase of income, and we should hope of better feeding. Certainly the demand for school feeding has diminished. Certain points in the production of malnutrition are of special importance, for example, antenatal conditions; social conditions, such as housing, and the non-domestic employment of the mother; and the employment of children out of school hours. During last year no fewer than forty-two investigations were made by various school doctors on special conditions relating to the schools or of particular sections of the children; a list of these researches is given on page 8 of the report.

Certain points in the working of the medical arrangements are considered. "Following-up" of cases reported for treatment is one of special importance. It is noted that nurses are now required to visit the home of the child to advocate home care and medical treatment; these visits are of particular value in the crusade against uncleanliness. The value of Care Committees, of the work of the teachers, and of school attendance officers is noted in this connexion. In London alone there are 1,000 Care Committees; their work is spoken of with much appreciation. The teachers' influence on the side of health is remarkably efficient. There was a time when the entry of the school doctor was resented as a general nuisance, one more unnecessary inspection, and in particular an infringement on the complete and indivisible authority of the pedagogue. Those ideas have gone, and with a surprising rapidity, for the teacher speedily learned that the work of the school doctor was all to his or her advantage. We must look to this interest of the teacher to carry on the work of school medical inspection in some part during these troublous times. The work of the doctor must be of necessity limited to matters of strict urgency, and this must needs demand the cessation of much of the routine medical inspection. The modern teacher can to some extent fill the gap; he has learned that dullness on the part of the child is not to be regarded as a natural folly bound up in the heart of the child, needing only to be driven forth with the rod of correction; he now knows that these difficulties commonly spring from physical disabilities which are frequently remediable by medical art; and we may look to the intelligent teacher to report these cases when they can no longer be sorted out by the regular use of the normal machinery.

Note is made of the increasing tendency to provide medical inspections in the secondary schools. There is no statutory requirement that this should be undertaken, but its manifest advantages cause the system to spread.

Note is also made of the duties arising out of the Mental Deficiency Act of 1913, the necessity for ascertaining what children are defective within the meaning of the Act, and the possibility of their mental improvement under education. Excluding imbeciles and idiots, it is considered that the number of educable mentally deficient children does not materially exceed 25,000. The number of certified schools for these children is 184, providing accommodation for 14,555 children, and having a total average roll of 13,563 children. Of these, 11 schools are residential, accommodating 902 children. The figures of the estimated number of children to be provided for and the available places indicate that increase in the number of these schools will be necessary in the future. It is undesirable, both in their own interest and in that of the normal children, that these children should drift on in the elementary schools. When there is doubt as to the educability of the child there is power to refer the case to the Board of Education medical authority. It will be of interest to have some report on the working of this provision. At present it does not seem to have been used to any great extent, but from evidence at our disposal it would appear that with the increasing difficulty in getting cases certified as ineducable there is a tendency to let all cases, save those of the manifestly imbecile, go in default. This would not be a satisfactory conclusion of the policy of check and counter-check in certification.

EDUCATION AND INFANT WELFARE.

"The Board of Education are responsible for bringing educational influence on the problem of nurture." The education of the child needs a healthy child; medical inspection, care, and treatment are natural corollaries, and there follows the inevitable necessity to bring influence to bear on the beginnings of the child, and particularly as those are affected by external surroundings and conditions. "The environment of the infant is its mother." In that saying is the justification of the recent extensions of the work of the education authority.

In 1914 no fewer than 93,166 children died in England and Wales under 1 year of age; the infant mortality rate was 105 per 1,000. That is the lowest rate for the last ten years with one exception. The chief post-natal causes of infant mortality are three: (1) Epidemic diarrhoea and enteritis—due mainly to bad feeding. (2) Immaturity and congenital defects—due it is thought in part to poor maternal physique or disease. (3) Respiratory disease—attributed to exposure, cold, and infection. Comparing the incidence of death in town and country it is manifest that with all our modern improvements the town is a bad place for the child. In ninety-seven great towns including London the death-rate was 114 per 1,000, in 145 smaller towns 104, in the rest of England and Wales 93. Even in great cities similar differences can be found. In Shoreditch the rate was 141, and in Bethnal Green 137, whilst in Chelsea it was 67, and in Hampstead 80. "It is obvious, therefore, that *urbanization*, with all its means of overcrowding, tenement housing, employment of women, domestic insanitation, etc., is exerting indirectly a profound effect on the health of young children." Sir George Newman concludes by stating that "the principal operating influence is the ignorance of the mother, and the remedy is the education of the mother."

The health of the child on entry to school, between the age of 3 and 6 years, points the same moral. For the most part the incidence of defects is much more heavy in the town children. Uncleanliness of body sometimes reaches the high figure of 12 to 15 per cent., and in certain districts still higher (Brighton 23 per cent., Bilston 37). Uncleanliness of the head varies from 15 to 20 per cent., but some districts are very bad (Mansfield 44). Rickets is found in from 1 to 3 per cent.; in some urban areas it is as high as 5 to 8 per cent. Eye diseases such as conjunctivitis and blepharitis run up to 10 to 12 per cent. in some large towns and at certain times. Diseases of the nose and throat vary widely, and are by no means always most prevalent in town children. Malnutrition in the counties varies in percentage between 5 and 20; the figures given for eight large north country towns vary from 16 to 30 per cent. It is held that these high rates are in many cases the effects of the same conditions that take such heavy toll in death. So that both the death-rate and the state of the infants when first brought to school point to the necessity for the education of the mother.

Four educational methods exist to this end—schools for mothers, day nurseries, nursery schools, and the training of elder girls.

(To be continued.)

MR. CHRISTOPHER WELCH has left his real estate in the county of Somerset to the University of Oxford for the endowment of scholarships for the study of biology, to be known as the "Welch" scholarships. They are to be tenable for four years and their total value is to be £400 a year, any surplus income to be paid into a reserve fund formed by the residue of his estate, to be used for the upkeep of the estate and for furthering the study of biology. If the university does not accept the conditions attached to the bequests, then the amount goes to six London hospitals, one of which shall be St. George's Hospital; but no hospital where vivisection is disallowed or discountenanced is to benefit, "antivivisectionists being enemies of the human race."

British Medical Journal.

SATURDAY, JANUARY 1st, 1916.

THE BRITISH MEDICAL ASSOCIATION IN 1915.

The War.

In time of stress, such as that through which we are now passing, it behoves all societies, associations, or other bodies of men, no less than individuals, to ask themselves the question, "What help can *we* give to our country?" The issues involved in this war are so many and serious that no one can be excused from rendering assistance in accordance with the means at his disposal. Thus it came about that quite early in the conflict the question thrust itself insistently on the minds of those responsible for the conduct of affairs in the British Medical Association, and led to action. At first this action was tentative in character, as might be expected when men had not yet recovered from the stunning blow caused by the sudden onset of the war. It consisted of little more than an offer to the War Office of all the assistance in the Association's power, the lending of some clerks to the overwrought British Red Cross Society, and the practice of certain economies in the domestic management of the Association itself. Committee meetings, for example, were reduced in number, and the meeting of the Council in October was abandoned. Early in August the Chairman of the Scottish Committee of the British Medical Association (Dr. Hamilton of Hawick) summoned a meeting to consider what steps should be taken to meet the medical difficulties arising from the war. At that meeting it was arranged to invite the presidents of the medical corporations of Scotland, the deans of the faculties of medicine in the four Scottish universities, the Scottish members of the General Medical Council, and the members of the Scottish Committee of the British Medical Association, to hold a meeting to consider further action. As a consequence of this meeting a committee was appointed representative of the various bodies mentioned, which issued a memorandum, and later on a detailed statement giving advice on the general principles which should be followed in making arrangements for the carrying on of the practices of those members of the profession who are serving with the King's forces. In this country also schemes were drawn up locally, the earliest of which was that adopted at Southampton on August 4th, 1914, and other Divisions of the Association followed suit, the purpose of the schemes being to put into force means of safeguarding, as far as possible, the practices of Territorial medical officers called up for service, or of those civilian practitioners who took temporary commissions. It was not long, however, before the possibilities of further work by the Association began to be discussed, and in September, 1914, the Army Medical Department was approached with a suggestion that, inasmuch as the majority of those who volunteered for service would be unacquainted with the details of medical military routine, some form of elementary instruction in their future duties might be organized. From this suggestion arose naturally the idea of grouping men in various classes according to the likelihood of need for their services. But at that time, when nothing more than an army of a million was in contemplation, the War Office was content with the position as regards the supply of medical officers, and considered that the 4,000 or 5,000 offers of service which it had received would amply meet all demands.

In January, 1915, the Council of the Association met for the first time since the outbreak of war. It was then recognized that the continued drain upon civil practitioners in England and Wales would need more careful watching than it had previously received. Consequently the work of dealing with problems arising out of the war was delegated to a committee, already in existence for other purposes, consisting of the Chairmen of the Standing Committees of the Association. To this Committee came the first definitely large demand made by the Director-General in consequence of the magnitude of the requirements resulting from the Dardanelles expedition. At the end of March the profession was asked to supply 2,000 more medical officers to the army; and thus began the co-operation between the Army Medical Department and the British Medical Association, which has since developed into close association. By July considerably more than half the required number had been obtained, and in many localities special steps were being taken. The Council of the Metropolitan Counties Branch, for example, having become impressed by the necessity for better organization of the medical profession in order to meet the requirements of an army infinitely larger than ever thought of in the earlier stages of the war, and recognizing that in the area of the Branch there must exist quite a large reserve of men who could be spared for military service, appointed a special Committee to organize the profession in London and the surrounding areas. Hence arose the first attempt at a register of men of military age fit for service, and the formation of local committees to supply information to the Committee of the Branch.

It was felt, however, that something more than a purely British Medical Association organization was required. Accordingly, it was proposed at the Representative Meeting in July that a special committee more national in character should be formed, including men who could represent the views of universities and other teaching or controlling bodies, no less than those of various types of practitioner. Thus was formed the Committee at first known as the "War Emergency Committee," and now entitled the "Central Medical War Committee." The reference to this Committee was "To organize the medical profession in such a way as will enable the Government to use every medical practitioner fit to serve the country in such a manner as to turn his qualifications to the best possible use; to deal with all matters affecting the medical profession arising in connexion with the war; and to report to the Council."

At his first interview with the Central Medical War Committee the Director-General put forward a request for 2,500 more medical officers, to be obtained before the middle of January, 1916. Possibly in making this request the Director-General had in mind the developments which have since taken place in the Balkans. The request was a large one, and called for strenuous effort; so that from the outset the first duty of the new committee was that of recruiting officers for the R.A.M.C. In furtherance of this work the War Register was completed for the whole of England and Wales; communication was established with the Scottish Medical Emergency Committee, which had already done much valuable work; and

every assistance was given towards the establishment of a similar committee in Ireland. With a view to close co-operation a representative has been nominated by both the Scottish and the Irish committees to serve on the Central Medical War Committee, which meets and has its offices in the house of the British Medical Association in London. Local Medical War Committees have been appointed by the practitioners of all but two or three areas throughout the country through the agency of the Association. To these committees any medical man can refer in his difficulties, while from them the Central Medical War Committee draws its information as to local needs and the ability of a district to supply more officers to the R.A.M.C.

In order to ensure rapidity of action and due preparation of every question for discussion by the full committee an executive subcommittee has been appointed, which meets at very frequent intervals, and confers with representatives of Government departments and other interested bodies. Thus close relations are being maintained not only with the War Office, but also with the Local Government Board, the Insurance Commissioners, the Board of Control, representatives of hospitals, and panel committees, as well as with the local Medical War Committees. When Lord Derby's recruiting campaign was started, it was recognized at once that the medical profession was not suitable ground for such efforts at voluntary enlistment. The Director-General and Lord Derby were approached, with the result that a statement was issued to the press whereby the recruiting of officers for the R.A.M.C. was left entirely in the hands of the Medical War Committees. Information has been given to all local committees describing the manner in which this recruiting problem should be dealt with. Quite recently the Committee for Scotland has issued a memorandum, reproduced in the SUPPLEMENT for this week, in which the details of the machinery are very clearly described.

As the result of interviews with certain Government departments, much has been done in the way of curtailing clerical work and setting free as many medical officers as possible for service. Valuable information has been received from the Insurance Commissioners with regard to areas in which there may be a possibility of undue depletion of doctors in consequence of the demands of the army. Innumerable doubts and difficulties have been settled for men seeking advice, and regulations based on recommendations of the Central Medical War Committee have been issued by the Army Medical Department.

Thus the efforts of the three committees have kept the army supplied with the medical officers required; but in order that there may be no falling off in the supply when further demands are made by the army, while at the same time keeping in view the needs of the civilian community, it has become essential that the whole profession should be organized so that every man may feel that he is doing his duty in connexion with the war. Hence the system of classification, grouping, and registration which was published in the SUPPLEMENT to the BRITISH MEDICAL JOURNAL of December 11th, 1915, a system the development of which will form the larger part of the future work of the Central Medical War Committee.

From this historical summary it will be seen that the British Medical Association has not been behindhand in its efforts to do what lies in its power for the good of the country. It has placed its resources and organization unreservedly at the disposal of special committees on which all interests are represented. It has sunk its own identity, and endeavoured to give its utmost support to national bodies fully representative of the whole profession. Its office has worked its hardest to make the work of the committees a success. Its JOURNAL, working in harmony with the *Lancet*, has done everything in its power to give publicity to the objects of the committees. The sacrifices made have already borne fruit. It rests with practitioners of all classes to see that the further work of the committees is even more successful, so that the medical profession may contribute to the fullest limit of its capacity to the attainment of victory.

Recently one of the great London daily papers has lent its columns to the publication of letters from critics of the present administration and organization of the Army Medical Service. Criticism is ever of the greatest value to those who are wise in the conduct of affairs; and there is ample evidence to show that both the Army Medical Department and the Central Medical War Committee have been duly receptive whenever valid argument has been advanced. The advocates of greater economy may be surprised to learn that within the last few weeks the use of some thousands of military hospital beds has been suspended; while retrenchment has been effected of some hundreds of medical officers in various capacities at the front. At the same time, the expansion of the army to some four million men will surely suggest to the least imaginative that further sacrifices are needed on the part of the medical profession no less than on the part of the lay community. As organization improves the need will become proportionately less great, but does any one suppose that an army of sixteen times its original strength can be built up in eighteen months without difficulties and without waste? Can any one point to any man or body of men whose hands and head are so free from occupation at the present time as to be able to produce perfect order in this enormous and hastily assembled machine? Are any of the critics, whose letters have been published broadcast, able to indicate with certainty the direction in which the economies they preach can be made immediately without loss of efficiency? A search through these letters reveals mountains of destructive criticism, but very little that is valuable for purposes of construction. Here and there a Government commission is hinted at; but does not history suggest that even this war may be over before such a commission makes its report? Do the writers of these letters suppose that the Medical War Committees have not gone deeply into the question of economy of medical officers from the fighting line to the base? Progress in reform must, of necessity, be slow; but all suggestions for improvement are welcomed, discussed, and, whenever they seem capable of adoption, urged in the proper quarter. It will be recognized that at the present time there must be an intermediary body between the civil practitioner and the Army Medical Department. Equally clear is it that there is no other body at all comparable to the Medical War Committees for dealing with the difficulties on both sides. Setting aside the demands of their own professional work, and being representative of all interests, while unfettered by lay control, the members of these committees have devoted much time to the problems that have come before them. Guided by the principle that this war must be speedily finished, and finished victoriously, the committees have endeavoured to set before the medical profession a lofty conception of duty. They aim at aiding the war authorities to appreciate civilian difficulties, to smooth the paths of those called upon to make sacrifices, to put to the best use the material

so freely offered. They endeavour to preserve to the civilian community as adequate a medical service as the military preparations against the gravest of perils allow. To all medical men they tender advice and assistance based on sympathetic understanding of the needs of the profession. If doubt is thrown upon the capacity of the three committees to carry out the work which they have set before them, the least that can be expected is that critics should offer alternative workable plans. Until such plans are forthcoming, capable of meeting the needs of the army no less than the medical requirements of the civil population, it would seem that the Medical War Committees are entitled to respect for honest and thoughtful work, and the British Medical Association to credit for the expenditure of its means and organization in furtherance of the requirements of the country.

Maternity and Child Welfare Centres.

Though the absorption of the nation in the prosecution of the war has necessarily diverted most of the energies of the Association towards the organization of the profession to meet the strain upon it, other matters of great importance have presented themselves for attention, of which we can only deal here with a few. The chief is undoubtedly the new movement by the Government and local authorities concerning maternity and child welfare schemes. To those who have given this matter serious attention it would appear that it may have a most vital influence on the future status of the general practitioner and on his relations with the public. Whether it is destined to lead to a further socialization of medical practice and a large development of medical officialism, or to a recognition on the part of the public that it would be a fatally short-sighted policy to weaken the position and undermine the usefulness of the general practitioner, is at present on the knees of the gods. But the decision is largely in the hands of the medical profession itself; the Representative Meeting of 1915 laid down the main lines of its policy, which is to utilize the opportunity for increasing the usefulness of the general practitioner to the community and thereby enhance his status. It is certain that in spite of preoccupation with the war this is a matter which demands constant watchfulness.

The Select Committee on Patent Medicines.

Another matter of great interest was the consideration of the report of the Select Committee of the House of Commons on Patent Medicines. This report was a very significant and most satisfactory recognition of the principles for which the Association has contended for years, and was in effect a complete justification of the arduous campaign carried on for so many years in the columns of the JOURNAL, including the publication of a long series of articles embodying analyses of a large number of preparations. This material was afterwards collected into two books, *Secret Remedies* and *More Secret Remedies*,[1] which attained a very large circulation among the public. It was obvious to the Council that it is at the present time impossible for the Association to gather the fruits of its victory by pressing Parliament to put into the form of an enactment the recommendations of its Committee, but the opportunity was taken to secure from the Chairman of that Committee his promise that when the appropriate time came the report would be pressed on the attention of Parliament.

[1] *Secret Remedies: What they Cost and What they Contain*; and *More Secret Remedies: What they Cost and What they Contain*. London: British Medical Association, 429, Strand, W.C. (Price 1s. each; postage, 3d. each.)

Legal Responsibility for Crime.

The report of the Association on the present state of the law with regard to legal responsibility for crime, prepared in conjunction with the Medico-Legal Society, the Medico-Psychological Association, the Bar Council, and the Incorporated Law Society, has won much praise from those who understand how unsatisfactory the present law and practice in regard to this matter are, and in addition has, it is believed laid the foundation for future good work in medico-legal matters in co-operation with bodies whose interests in such matters are great, and whose influence is wide-reaching.

Assistant Asylum Medical Officers.

A good example of co-operation with bodies representing sections of the profession which has for so long been the practice of the Association was the determination of a policy as regards the conditions of employment and remuneration of assistant asylum medical officers, reached in consultation with the Association of Assistant Asylum Medical Officers of England and Wales.

Insurance Acts.

In the ordinary course of events the end of the year would have seen the revision of the terms under which medical practitioners are engaged in working the Insurance Acts, but this matter has perforce been postponed until a more favourable opportunity. The year has been characterized by a steadily increasing closeness of co-operation between the Association and those committees which specially represent panel practitioners. During the campaign which preceded the passing of the Act of 1911 the Association strongly emphasized the necessity of the establishment of such committees; since then its fixed policy has been to help them as much as possible by advice and such assistance as can best be given by a central organization. For the third year in succession a conference of representatives of Local Medical and Panel Committees was held, and that of 1915 was undoubtedly the most representative and business-like of all. The conference marked its sense of the usefulness of the Association to panel practitioners by definitely recognizing it as the central mouthpiece of the local committees in dealing with the Government and the Commissioners, and the latter body has recognized this relationship by consulting the Panel Committees on matters of general importance through the Insurance Acts Committee of the Association, which has now been strengthened by the addition of members nominated by the Conference to represent the Local Medical and Panel Committees of the country. Such a relationship augurs well for the future, for it must be clear to all that when the war is over matters of the greatest importance to the profession in general and to panel practitioners in particular will present themselves for consideration and decision; it will be well that when the occasion arises it should be found that so far as the great majority of the Panel Committees are concerned they are prepared to present their case through an experienced central body with the influence, organization, and financial backing of the British Medical Association. It is not necessary to attempt any more detailed examination of this branch of the Association's work, for the facts are well known to members, but a passing reference may be made to the recent success of the Association in claiming and securing what the great majority of Panel Committees demanded in connexion with the recent changes in the finance of the Drug Fund

brought about by the report of the Departmental Committee on the Drug Tariff—namely, an assurance from the Government that until a general revision of terms takes place the 7s. a head set aside for medical attendance on insured persons shall not be touched for the purpose of making up any deficiencies in the Drug Fund. This one result of the Association's work for 1915 in this department is a good augury for the success of its future efforts.

THE MIND OF A PROFESSION.

MR. COPE CORNFORD'S little book about the navy—*With the Grand Fleet*—is valuable for two reasons: First, because it does not boast of numbers of ships or weight of armament, but describes the mind of the fleet. As Lord Charles Beresford says in his introduction: "The many generations of seamen, who strove through their lives to make the service what it ought to be, have created a body of thought, of tradition, and of aspiration, which is the inheritance of the navy of to-day, and which may be called the Greater Mind. . . . It is the Greater Mind in the navy which has gained the mastery of the sea." It is valuable, secondly, because by showing the mind at work it affords to the landsman an example of the absolute subordination of every action to the one idea of duty—duty to the nation, irrespective of what politicians at Westminster or officials at Whitehall may do or leave undone. There is no set of men in whom the professional spirit is so strong, and it pervades all ranks. The politicians come and go, and the tendency of permanent officials of all departments to mistake the means for the end, machinery for output, is so strong that few escape it. But the mind of the navy has gone on and grown. In the end the collective mind of the men who know, the men of thought and of action, wears away the obstructions put in its way by long-taled officials, whose horizon is bounded by returns and memorandums, and minutes, and "what the country will stand," and the other shibboleths. "The Navy," again to quote Lord Charles Beresford, "desires nothing but to be left to do its own work in its own way, governed and guided by naval authority." It is a right for which every profession has to fight. The bar fought and won its battle long ago, and is to-day a remarkable piece of human organization very admirably adjusted to its purpose; it is the palladium of the liberty of the individual. The Navy, the palladium of our national liberty, has had to fight the dark powers of politics and officialdom generation after generation. In quiet times it has lost the right to do its own work in its own way, but the mind of the navy has lived on: you cannot strangle a mind even with red tape, or do more than hamper it by political foolishness, and in times of stress the navy has regained its right. The Church long ago sold its freedom for a mess of pottage, and the lovers of freedom at both extremes revolted. Medicine has only recently come into contact with the deadening influence of the official, and hardly yet realizes the narrowness of his outlook and the mischief he is capable of doing to the nation should he be allowed to prevail. Therefore, it is worth the while of every medical man and woman to read Mr. Cornford's book to see what peril the nation has escaped and how it escaped, and also for the lifting up of his or her soul at this season when the elements seem to conspire with the newspapers to enwrap us in an atmosphere of gloom.

MYELOID LEUKAEMIA AS AN INFECTIOUS DISEASE.

MYELOID LEUKAEMIA is a disease that appears spontaneously in barnyard fowls from time to time. Dr. H. C. Schmeisser[1] has recently come across a case, in a Plymouth Rock hen, and has succeeded in transmitting the disease to other fowls and to chickens up to the fifth generation. The transmission was effected by the intravenous or intraperitoneal injection of fragments of liver or spleen, thoroughly macerated in normal saline solution and roughly filtered through cotton or linen, or through filter paper if the injection was given intravenously. Out of 105 animals used in the different experiments, 22 developed the leukaemia, and a similar diagnosis suggested itself in 4 more. The incubation period was usually five or six weeks, with a maximum of sixteen; the onset of the disease was sudden, with pallor and rapid emaciation, weakness, but no fever. The illness lasted a week or two; only one case recovered. The character of the blood count changed rapidly. Whereas the normal hen has 3 or 4 million red cells and from 20,000 to 80,000 white cells per cubic millimetre of blood, with from 60 to 70 per cent. of haemoglobin, as estimated by Sahli's instrument, the hen with myeloid leukaemia will have less than a million red cells and perhaps 200,000 white cells per cubic millimetre, and the haemoglobin may fall to 10 or 15 per cent. The differential leucocyte count also shows great changes. Normally, the hen may have 42 per cent. of lymphocytes, 34 per cent. of eosinophile polymorphonuclears, and 20 per cent. of large mononuclear cells of myeloid origin. In the form of leukaemia studied by Dr. Schmeisser the large mononuclear cells may form 86 per cent. of the leucocytes. The liver and spleen are both greatly or even enormously enlarged, being packed with aggregations of myeloid leucocytes; the kidneys are enlarged, and the bone marrow shows a characteristic loss of fat with increase of marrow cells. The blood picture and the *post-mortem* changes in the organs were the same in the original case as in those produced by the injection of tissue emulsions into healthy fowls. Dr. Schmeisser notes that infectious leukaemia in fowls was first properly recognized by Butterfield in 1905, and that the disease was first transmitted to other healthy fowls by Ellerman and Bang in 1908; Ellerman recently found that the infection could be conveyed by Berkefeld filtrates, and observed that the transmitted leukaemia might be of either the myeloid or the lymphatic type. Dr. Schmeisser has not yet published his study of the nature of the infecting agent in his case of spontaneous myeloid leukaemia in the fowl. It should prove to be of great interest, for the reason that the disease as it occurs in these animals has obvious analogies with the lymphatic and myeloid leukaemias in man; here the disorder has all the appearances of an acute or subacute infectious process, yet its infectivity is unproved, and the virus producing it is at present wholly unknown.

[1] *Journ. Exp. Med.*, vol. xxii, p. 820.

A PLEA FOR THE SICK SOLDIER.

WHILE in these days the wounded soldier is much in evidence, and is naturally and rightly an object of sympathetic interest to us all, there is perhaps some danger that the man who has been invalided on account of sickness may be a little neglected. But while he makes less appeal to sentiment, his suffering is not less real, while his incapacity may be worse than that of his wounded brother in arms. M. Bachimont, deputy for the Aube, proposed in his interest to amend a bill as to the award of decorations for war service in which the military medal was reserved for wounded men. In support of this Professor Landouzy, Dean of the Paris Faculty of Medicine, addressed a letter to M. Bachimont, in which he asked with pardonable warmth whether the sick—on whom typhoid, diphtheria, scarlatina, dysentery, cerebro-spinal meningitis, or tuberculosis had left their mark in permanent damage of the nervous system, the heart, the liver, or the kidneys—were not as deserving of respect and pity as if they had lost an arm, a leg, or an eye by shell fire. A man disabled by functional trouble of an

internal organ is often left in a worse state than one who has lost a limb. Soldiers invalided out of the service on account of sickness have before them, M. Landouzy pointed out, the prospect of dragging out a precarious, difficult, and painful existence; and to those who have a keen sense of the duty they owe to society life may be further darkened by the knowledge that if they marry with constitutions undermined at an early age, they are likely to beget feeble and unsatisfactory offspring. M. Landouzy, while pleading the cause of the man disabled by sickness, makes him the text for a vindication of the place of the physician in war. In their inmost hearts, he says, people in general think they owe a greater debt of gratitude to surgery than to medicine; he, on the other hand, maintains that medicine, which has now at its disposal in vaccines and serums powerful means of preventing and curing the infections that threaten soldiers, is as beneficial as the conservative surgery of mutilated limbs. Even now it is not fully realized that until the other day armies in the field paid a heavier tribute to disease than to wounds. In proof of this M. Landouzy points to the fact that of the 100,000 Frenchmen who died in the Crimea 80,000 fell victims to typhoid, typhus, dysentery, cholera, scurvy, and other diseases.

NOTIFICATION OF MEASLES.

THE general order of the Local Government Board for the compulsory notification of measles and German measles comes into force on January 1st, 1916, throughout England and Wales. The order is addressed, among others, to medical practitioners. Every medical practitioner is required, so soon as he becomes aware that a person upon whom he is in professional attendance is suffering from measles or German measles, forthwith to make a notification on the proper form and send it to the M.O.H., unless he has reasonable ground for supposing that it has already been notified, or unless a case of the disease has to his knowledge occurred in the same household or institution, and has been notified within the period of two months immediately preceding the date on which he first became aware of the disease. If, however, the case is being treated in a hospital for infectious diseases, the practitioner is not required to notify it. There is every reason to suppose that about 55 per cent. of the cases of measles occurring are never seen by a doctor; some help in overcoming the difficulty thus created has been given by school notifications, but the majority of cases occur at the age of 4 years or under, and it is at these ages that the largest number of deaths are recorded. The Order also requires every parent or guardian, or other person, who becomes aware of or who has reasonable grounds for supposing that any person in his charge is suffering from measles or German measles to notify the M.O.H., unless he knows it has already been notified by a medical practitioner. The Order further authorizes all public health authorities throughout the country to provide nursing assistance for necessitous cases of measles. Hitherto a special order from the Board has been necessary to give a local authority this power. It may now provide or contract for the provision of medical and nursing assistance for the poorer inhabitants of the district when suffering from either measles or German measles, and instruct the M.O.H. to take steps to investigate the source of infection, to prevent its spread, to remove conditions favourable to it, and, if a medical practitioner is not in attendance, to ascertain the nature of the case. It is believed that the symptoms of measles are sufficiently pronounced and well known to enable the parent or the health visitor to entertain at least a suspicion of the nature of the disorder, but this is, of course, a weak point in the scheme. The power given to all sanitary authorities to provide nursing assistance under the Order is most important. It is the first instance, apart from tuberculosis, in which this power has been given generally to sanitary authorities. There is reason to hope that by its judicious use a large saving of life will be effected by diminishing the toll of deaths now due to measles among impoverished children under school age.

MEDICAL HERALDRY.

PROBABLY the great majority of medical men would, if called upon for a declaration of faith on the subject, have to make the confession with which Francis Osbaldistone shocked Di Vernon when he said, "The mysteries couched under the grim hieroglyphics of heraldry are to me as unintelligible as those of the pyramids of Egypt." Yet medicine has a heraldry of its own, and much ingenuity has been shown in devising armorial bearings for doctors whom the King for good and sufficient reason delights to honour. In an interesting article published in the November and December numbers of the *Antiquary* Dr. S. D. Clippingdale gives the fruits of a laborious research in this obscure field of historical lore. He describes, in many cases with illustrations, the coats of arms granted to medical corporations and to individual members of the profession. He says that probably the first medical man in this country to receive a grant of arms was John Leche, surgeon to Edward III, who was thus honoured because he had taken upon himself the costly duty of entertaining in his house at one time three sovereigns—the Kings of England, Scotland, and France. This would seem to suggest that in the fourteenth century surgery was a very lucrative profession. In devising arms for doctors the heralds have sought inspiration from traditional symbolism, from what may be called the weapons of the craft, and from the personal achievements of the individual honoured. In the first of these categories are the rough staff of Aesculapius with the serpent entwined about it, and the Mercury's wand or caduceus, a slender metal rod with two serpents coiled round it, and two expanded wings attached to the upper end. The appropriateness of the staff of Aesculapius is of course obvious; it figures in the arms of Sir Henry Halford, Sir Joseph Fayrer, Lord Lister, Sir James Young Simpson, Sir William Savory, Sir Henry Thompson, and Sir Thomas Barlow, and it forms the badge of the Royal Army Medical Corps. Serpents have a place in the arms of Sir Samuel Wilks, Sir Gilbert Blane, Sir William Gull, Sir Prescott Hewett, Sir William Jenner, Sir Trevor Lawrence, and Sir Thomas Crosby, late Lord Mayor of London. The earliest appearance of the caduceus in English medical heraldry is, according to Dr. Clippingdale, on the crest of Sir William Butts, physician to Henry VIII. Modern instances are seen in the arms of Sir William Broadbent, Sir George Burrows, Sir Lauder Brunton, Sir Rickman Godlee, and Lord Ilkeston. The precise meaning of the caduceus as a symbol of the art of healing is not apparent. Mercury was in the old Roman mythology the patron of tradesmen and thieves, but we cannot admit that in this character he can be regarded as having any connexion with medicine. Mercury was also venerated as the messenger of the gods, a function expressed by the wings in the caduceus; in this capacity he may perhaps be accepted as symbolical of medicine. Lamps and other means of illumination, denoting the light of science, figure in medical heraldry. Flaming torches are seen in the arms of Sir John Williams, Sir James Reid, Sir Henry Thompson, and Sir Thomas Barlow. The lamp has a place in the arms of Sir William Jenner and Sir William MacCormac. The eagle, which occurs as the crest of the Royal Colleges of Surgeons of England and Edinburgh, is also found in the arms of many medical men. The anchor, emblem of hope, is of frequent occurrence. Of the weapons of the craft, the most common, as it is the earliest, is the fleam or lancet, which is found in the coat of arms granted to the Surgeons' Company of London in 1451; supported by the Ophiuchus, a fabulous animal credited with healing powers, it forms the crest of Sir Frederick Treves. The spatula is seen in the arms of the

Barber-Surgeons' Company, and knives, saws, forceps, and other instruments form the border of those of the Edinburgh College of Surgeons. Among the medicinal plants which figure in heraldry may be mentioned the pomegranate in the arms of the Royal College of Physicians, and digitalis in those of Lord Ilkeston. In this case the plant was chosen as symbolizing the work on the heart, on which the reputation of the physician who in his practising days was known as Balthazar Foster was mainly founded. Other plant emblems are the iris flower in Sir Anderson Critchett's crest, which is probably an allusion to that eminent surgeon's operations on the eye; and the daisies in Sir Richard Quain's arms, which, according to Dr. Clippingdale, are understood to have been inserted because that was his favourite flower.

CASUALTIES AND RECOVERIES.

IN a short note in our last issue on some statistics circulated in Germany as to the number of wounded who, during the first year of the war, had died, had been discharged as unfit, or had been returned to duty, it was pointed out that the figures conveyed no information on the point of real importance, namely, the percentage of men wounded in the firing line who recovered so completely as to be able to return to it. The object with which such figures were circulated was no doubt mainly to convey the impression that the percentage reported to be discharged from hospital were effectives who returned to the firing line, and in this way to encourage the German people and throw dust in the eyes of neutral countries by discrediting the calculations as to the wastage of the German armies. It was also, no doubt, intended to glorify German surgical methods as compared with those of the surgeons of the allied nations, for it was boasted that the armies of no other nation could show like favourable results. As a matter of fact, the comparable statistics of the British army are rather better, and though the French figures given on the authority of M. J. Bertillon, the well-known medical statistician, were not quite so good, it is not clear that they are comparable, as they appear to include all wounded men who reached a hospital in France, whereas the German and British referred only to men who reached a hospital in Germany or the United Kingdom. We said then that the figures given were fallacious so far as they purported to indicate the amount of wastage; and it is interesting to find this view more than confirmed in a recent article by the Swiss military writer, Colonel Feyler. The article is in the main a warning to the Allies not to let themselves be misled into supposing that Germany has yet reached the end of its man power, although he thinks this point may be reached next spring. He says, however, that in a particular army corps for which statistics were available to him, the proportion of the men who have remained at the front since the beginning of the war represent 12 per cent. of the effectives sent there at the beginning, and that a somewhat large proportion—about 20 per cent.—are men who, after being evacuated, have recovered and returned to the front after an average interval of four months. In this corps, therefore, 68 per cent. of the men who belonged to it at the beginning of the war have been replaced. According to the figures given in the House of Commons by Mr. Tennant on December 21st, the total casualties of the German army as published in the official casualty lists for Prussia, Saxony, Bavaria, and Wurtemberg down to November 30th, 1915, numbered over 2 millions and a half. About half of these were accounted for under the heads of killed or died of wounds (nearly half a million), severely wounded, died of disease, or missing. This leaves about a million and a quarter casualties unaccounted for, and it is on the proportion of wounded among them that any calculation as to the number of men who return to the fighting line can alone be founded. According to the statistics given in a written answer by the Prime Minister on December 23rd, the total casualties in the British force in Flanders and France, the Dardanelles, and other theatres of war, amounted to rather over half a million, of whom nearly 120,000 were killed. These figures do not include the sick, of whom there were nearly 100,000 admitted to hospital from the Dardanelles operations alone between April 25th and December 11th. The proportion of missing, which no doubt includes a majority of killed, is about one-seventh in the armies of both countries, but is a fraction higher in the British than in the German.

MEDICAL ENROLMENT.

THE decision to adopt the principle of compulsory military service need not affect the position of members of the medical profession, inasmuch as the arrangements made in advance by the Medical War Committees will, there is every reason to expect, suffice to meet all the demands of the medical service of the army. The history of these committees is given above (p. 20 et seq.), and the general character of the scheme worked out is there very fully set forth. Full details of the plan of the Scottish Medical Service Emergency Committee are given in the SUPPLEMENT this week (p. 1), and the details of the method of procedure in England and Wales, which it is hoped to announce finally next week, will, no doubt, be on the same lines as have been arranged in Scotland. Medical men in England and Wales who have not yet enrolled should at once do so through the Medical War Committee for the area in which they reside. All these local committees are in direct communication with the Central Medical War Committee for England and Wales, which will give to each applicant a certificate of enrolment. It has made arrangements for the grouping of members of the profession in the manner stated in its circular letter to the local Medical War Committees published in the SUPPLEMENT of December 11th, 1915, p. 214. With regard to the order in which individuals should be called on for service, the Central Medical War Committee will consider, in co-operation with the local Medical War Committees, the special difficulties of any individual practitioner, with a view to meeting them, or, if necessary, relegating him to a later group. The present position, therefore, is that medical men should not attest under Lord Derby's schemes, but should enrol with one of the national Medical War Committees. On any point of personal difficulty medical men in England and Wales are invited to communicate direct with the secretaries of the Central Medical War Committee, 429, Strand, London, W.C.

THE Leeuwenhoek medal of the Netherlands Academy of Sciences, awarded to Surgeon-General Sir David Bruce, F.R.S., A.M.S., was presented to him on December 24th by the Netherlands Minister in this country. Leeuwenhoek was a Fellow of the Royal Society, and the majority of his discoveries were published in the *Philosophical Transactions*. The medal was founded in 1875, on the occasion of the Leeuwenhoek celebration in Delft, and is presented every ten years. It was awarded to Ehrenberg in 1875, to Ferdinand Cohn in 1885, to Louis Pasteur in 1895, and to Beyerinck in 1905.

A MEMORIAL of Eustachius was recently unveiled in the great quadrangle of the University of Rome in the presence of the Prime Minister, the Minister of Public Instruction, the Mayor of Rome, and the rector and members of the Senate of the University. The memorial, which is a bronze tablet attached to one of the pillars of the upper portico, near a marble memorial of Victor Emanuel II, represents Eustachius in his professor's robes in the act of lecturing; he holds in his left hand a human skull and the right arm rests on tables showing the structure of the ear. The inscription by Professor Giacomo Giri is as follows: *Bartholomaeo Eustachio, Picenti, Artis anatomicae lumini, Senatus Academicus, quartis feriis secularibus, Anno MDCCCCXIV.*

Medical Notes in Parliament.

War.

Total Casualties.—In a written reply to Mr. Molteno, on December 23rd, the Prime Minister supplied the following statistics of the total casualties in all fields of operations down to December 9th, 1915:

Flanders and France.

	Officers.	Other Ranks.
Killed...	4,829	77,473
Wounded	9,943	241,359
Missing	1,699	52,685
Total	16,471	371,517
	387,988	

Dardanelles.

Killed...	1,667	24,535
Wounded	3,028	72,781
Missing	350	12,194
Total	5,045	109,510
	114,555	

Other Theatres.

Killed...	871	10,548
Wounded	694	10,953
Missing	100	2,518
Total	1,665	24,019
	25,684	

Grand Total—All Theatres.

Killed...	119,923
Wounded	338,758
Missing	69,546
	528,227

Mediterranean Casualties.—In reply to Mr. Joynson-Hicks, Mr. Tennant stated on December 23rd, 1915, that the total casualties in the Dardanelles to December 11th, 1915, including the Naval Division, were:

	Officers.	Other Ranks.
Killed (including died from wounds and died)	1,609	23,670
Wounded	2,969	72,222
Missing	337	12,114
Totals	4,915	108,006
Grand total	112,921	
Sick admitted to hospital April 25th to December 11th, 1915 ..	96,683	

In reply to a further question, Mr. Tennant said that there was every reason to hope that sickness would be a decreasing quantity. In regard to the time allowed before men returned as missing could be counted as killed, it was necessary to allow a long time, but in many cases unofficial reports came from comrades, and in such cases from four to five months would be about the time taken to give a certificate of death. In regard to the returns of casualties from France, those invalided home sick were not included among the wounded.

German Army Casualties.—Mr. Tennant stated, on December 21st, in reply to the Earl of Kerry, that the total casualties as published in the official casualty lists for Prussia, Saxony, Bavaria, and Wurtemberg up to November 30th, 1915, amounted to 2,524,460. Of these there were, according to the official lists:

484,218 killed and died of wounds.
384,198 severely wounded.
27,674 died of disease.
381,149 missing.

Men Discharged as Medically Unfit.—On December 23rd Mr. Tennant informed Sir E. Cornwall that statistics of the number of enlisted men discharged from the army as medically unfit after less than six months' training were not available, and could not be compiled without throwing an undue strain on an already overworked department.

Hospitals for Officers.—On December 23rd Mr. Newdegate asked whether the grants allowed to hospitals for officers, which received no other form of assistance, were varied in amount; what was the maximum and minimum grant; and why there was inequality. The Financial Secretary to the War Office said that many sick and wounded officers received care and treatment in private hospitals provided by the praiseworthy generosity of people of sympathy and wealth. Other officers were on occasion accommodated in nursing homes. Where payment or assistance from public funds was asked for, each case was considered on its merits.

Pensions and Grants.—The Financial Secretary to the War Office undertook, on December 23rd, to inquire into any cases in which there was reason to suppose that right had not been done with regard to grants to dependent soldiers in accordance with the recommendations of the Select Committee.

Leprous German Prisoner.—In reply to Mr. Butler Lloyd, Mr. Tennant said that a German prisoner of war suffering from leprosy, who had been for some months within a few paces of the sentry and guardroom at Handsforth, near Manchester, was being removed to a hospital at Dartford, where special accommodation had been prepared for him. He did not think it would be well to send this prisoner back to his own country with the next party of exchange prisoners.

Medical Units in Serbia.—In reply to Mr. Mills, Sir Edward Grey said, on December 22nd, that no list of the doctors and nurses who have left Serbia had been received; the latest information was that Sir Ralph Paget arrived at Brindisi on December 18th with 120 members of the medical missions to Serbia.

Female Nurses in Asylums.—In reply to Mr. Jowett, who asked whether steps would be taken to prevent any further appointments by asylum committees of female nurses in place of male attendants, the Home Secretary said that the Board of Control was watching the matter carefully. The employment of female nurses to release men for enlistment was allowed in suitable cases and under proper safeguards.

Vaccination Prosecutions in Dublin.—In reply to Mr. Nugent, on December 22nd, Mr. Birrell said that legal proceedings had recently been instituted in Dublin against defaulters under the Vaccination Acts. The papers did not show whether the persons in default were civilians or whether any of them belonged to the army. There were no exemptions from vaccination, and it would be most unfair if children were not protected from the danger of small-pox while their fathers were at the war.

Chlorine Gas for Living Animals.

THE following appears in the *Official Report* of Parliamentary Debates in the House of Commons, December 21st, 1915:

Mr. Greenwood asked the Home Secretary whether he has granted a certificate under the Cruelty to Animals Act, 1876, to Mr. Leonard Hill, under which Mr. Hill performed a number of experiments upon living animals with chlorine gas, as reported in the BRITISH MEDICAL JOURNAL of December 4th, 1915; if such experiments were performed in the United Kingdom, where were they performed, what were the terms of such certificate, and who was the person who signed the same as required by the said Act; what were the animals used by Mr. Leonard Hill in these experiments, and how many of such animals were so used; and, if more than one kind of animal was used, how many of each kind.

Sir John Simon: I have made inquiry, and find that the research described in the article referred to was conducted jointly by Dr. Hill and Dr. Flack, but that all the experiments referred to were performed by Dr. Flack. They were performed in the laboratory of the Medical Research Committee at the London Hospital Medical College, and six were done under licence alone and twelve under Certificate A. Under licence alone six animals were used (five cats and one rabbit), and under Certificate A twelve guinea-pigs. Dr. Flack's certificate A was given by the President of the Royal Society and the Professor of Physiology, London University.

AT a meeting held recently at New York it was stated that the America Red Cross aims at getting an endowment fund of £20,000, and a membership comprising every man, woman, and child in the United States. The wish was also expressed that all the American war relief societies should be amalgamated in its organization. Ex-President William H. Taft, recently appointed Chairman of the Central Committee of the Red Cross, was among the speakers.

THE WAR.

RESULTS OF ANTITYPHOID VACCINATION IN THE FRENCH ARMY.

DR. JULES COURMONT, who is in charge of the isolation hospitals of the XIV District (French military administration), has issued an interesting report on the results of antityphoid vaccination from August 2nd, 1914, to July 1st, 1915. Haemoculture was employed for diagnostic purposes wherever possible, as it was recognized to be the only really trustworthy guide to the nature of the infection. The cases observed, in fact, included a large proportion of infections by paratyphoid organisms.

The total number of admissions of patients diagnosed to be suffering from typhoid fever was 1,347; of this number 891 had not been vaccinated, and 256 had been inoculated from one to four times with Vincent's non-polyvalent vaccine; of the 891 unvaccinated, 506 came from the front and 385 from the XIV District; of the 256 vaccinated, 96 came from the front and 160 from the XIV District.

The number of deaths among the 891 unvaccinated was 155 (17.4 per cent.); of these, 80 were from the front and 75 from the district. There were only 8 deaths among the 256 vaccinated (6 from the front and 2 from the district). If the subjects who received the regulation four inoculations were accepted as vaccinated the percentage of deaths would only be 1.9. The following is the complete table:

Admissions.	Total.	Front.	XIV District.	Slight Fever.	Medium Fever.	Grave Fever.	Deaths
1 injection ...	51	19	32	35	12	4	3
2 injections ...	50	25	25	36	10	4	2
3 injections ...	39	20	19	24	13	2	1
4 injections ...	116	32	84	85	29	2	2
Total ...	256	96	160	180	64	12	8

This gives:

	Deaths.
Non-vaccinated	17.4 per cent.
Vaccinated:	
1 injection	6.0 per cent.
2 injections	4.0 ,,
3 injections	2.5 ,,
4 injections	1.9 ,,

From the bacteriological point of view the proportion of paratyphoids was high. Haemoculture was used in 100 cases of the vaccinated, and proved negative in 25 and positive in 75. Of the 75 positive cases, 3 yielded Eberth's bacillus (2 of these had only had a single injection, and of these 1 died, the third had 2 injections); 71 yielded paratyphoid B and 1 paratyphoid A. Of the 116 infected patients who had received the four injections 63 showed paratyphoid B.

Antityphoid vaccination is thus shown to be unquestionably active and efficacious, but these figures point to the desirability of making use of a polyvalent vaccine (Eberth, paratyphoid A and B).

PUBLICATION OF SCIENTIFIC PAPERS.

(From a Correspondent in Northern France).

A FEW weeks ago there was circulated for general information a memorandum by the D.G.M.S. in regard to articles submitted for publication in professional journals. To this it is worth while to direct specific attention since its purport has in many quarters been misunderstood. The memorandum ran as follows:

The following resolution was passed at a meeting of R.A.M.C. Library and Journal Committee held in London on October 22nd, 1915:

"That it be represented to all officers of the R.A.M.C. and to those holding temporary commissions in the R.A.M.C. both at home and overseas, that the *Journal of the R.A.M.C.* should be considered the first in which military medical articles of permanent interest should be published.

"Articles intended for publication in journals such as the BRITISH MEDICAL JOURNAL and *Lancet* should at the same time be offered to the *Journal of the R.A.M.C.*

"The Director-General, British Army in the Field, and the Principal Director of Medical Services Mediterranean Force, to be informed accordingly."

All administrative medical officers and officers in command of medical units are requested to encourage officers to send in articles in accordance with the terms of this resolution.

This circular, though not obscurely worded, was interpreted by some as an intimation that medical officers serving with the Royal Army Medical Corps and desirous of recording their views or experiences in professional connexions must give their preference to the *Journal of the Royal Army Medical Corps* itself, and that unless they did so permission to publish their articles at all was not likely to be forthcoming.

I am in a position to state that any such view is not only erroneous in itself but is quite opposed to the aims of the medical authorities out here. They desire not only to encourage medical officers to study their cases carefully, but also to assist them as far as possible in interchanging any views they may form. Obviously such interchange of views would be handicapped if medical officers had to limit their search for publication of any articles they may write to one particular journal, and more particularly if such journal were one which appeared only at monthly intervals.

The object of the medical authorities in France in affording publicity to the resolution of the R.A.M.C. Library and Journal Committee which has been quoted was decidedly not to suggest that the authors of articles should aim at publication in that *Journal* alone. It was to bring home to them the existence of that *Journal*, and to show them that if they pleased they could have a chance of securing publication in two medical periodicals instead of one alone. Between a monthly journal and a weekly journal there is never any rivalry, and the fact that an article is submitted simultaneously to two publications of this order is not likely to lessen the probability of its acceptance by either of them.

Consequently, all that medical officers have to do to secure the chance of double publication is to mark one of the two copies that they must in every case submit as being intended for the consideration of the weekly journal of their choice, and the other as for the consideration of the editor of the *Journal of the Royal Army Medical Corps*.

Two copies of any article for which it is desired to secure publication must be submitted in order to comply with the terms of paragraph 453 of the King's Regulations. As these Regulations constitute the common law of the British Army, whether in times of peace or of war, precise compliance with them is essential on the part of all ranks. As the wording of the Regulation in question does not seem to be well known, it is worth while to quote it here at full length:

An officer or soldier is forbidden to publish in any form whatever, or communicate, either directly or indirectly to the press, any military information or his views on any military subject, without special authority; and an officer or soldier will be held responsible for all statements contained in communications to his friends which may subsequently be published in the press or otherwise. He is not to prejudge questions which are under the consideration of superior military authority by the publication, anonymously or otherwise, of his opinions, and he is not to take part, in public, in a discussion relating to orders, regulations, or instructions issued by his superiors.

Any information of a professional nature which he may acquire while travelling or employed on duty is to be regarded as the property of the War Department, and is not to be published in any form without the previous sanction of the Army Council, or in India of the Commander-in-Chief.

When application is made for permission to publish any article, etc., the document will be either typewritten or in proof form, and will be submitted in duplicate direct to the War Office (or in India to the Commander-in-Chief). A statement will be enclosed from the authority (if any) under whom the applicant is immediately serving that such authority has no objection to permission being applied for. One of the copies will be retained at the War Office or by the Commander-in-Chief in India, as the case may be, for reference. Permission to publish will apply only to the article, etc., as submitted, and no alterations therein, except of a purely editorial nature, and no additions thereto are to be made subsequently without the authority of the Army Council (or in India of the Commander-in-Chief). The permission to publish the article, etc., will not convey any official endorsement of its contents, and no statement tending to imply official approval or endorsement is to be included in any part of the publication, nor is the permission to be referred to in any way.

It may possibly occur to some that as this regulation states that one copy must be retained at the War Office, authors who desire to see their papers published in two

journals ought really to submit three copies. This, however, is not really essential, for the *Journal of the Royal Army Medical Corps* is a semi-official publication, and all papers submitted for the consideration to its editor are handed in to the War Office itself. Consequently they can be duly filed thereat when their fate as to publication has been determined. The only object, of course, in insisting that two copies of any proposed paper should be submitted is to place a check upon any disposition on the part of an author to make other than purely verbal alterations in an article after it has been duly approved.

This approval or censoring is done at head quarters, and unless the contents of the article happen to demand the consideration of more than one department of the Commander-in-Chief's staff, they usually reach home within a few days of their receipt. They arrive, or rather should arrive, at head quarters after passing through the hands of the administrative officers to whom the medical officer concerned is directly subordinate—namely, the O.C. of his unit, the A.D.M.S. of the area or division in which he is serving, and the D.M.S. of the lines of communication or of the army to which the division in question is attached, as the case may be.

The following is a draft of the kind of letter that medical officers should send with their proposed articles:

From Captain John Smith, R.A.M.C.,
To O.C., No. 120 Casualty Clearing Station. France,
Dec. 19th, 1915.

Sir,

I have the honour to submit herewith in duplicate an article on enteric. If approved I request that one of the copies may be sent to the Editor of the BRITISH MEDICAL JOURNAL and the other to the Editor of the *Journal of the Royal Army Medical Corps* with a view to publication. They are marked accordingly.

I have the honour to be, Sir,
Your obedient Servant,
(Sd.) JOHN SMITH,
Captain R.A.M.C.

In conclusion, it is of interest to be able to record that since the first day of the current year (1915) up to the date on which I am writing—December 19th—the total number of articles submitted to head quarters by medical officers for publication is 141, and with one exception all have been approved and forwarded after verbal alteration, such as the erasion of the names of units the publication of which is, on military grounds, prohibited. How many of them have reached the light of day by appearing in the medical journals it is impossible to ascertain, but making due allowance for such as have been stillborn, owing either to lack of space or other purely editorial cause, the total output can hardly be deemed satisfactory in point of bulk, considering the vast amount of material that medical officers have had at their disposition.

HONOURS.

THE *London Gazette* of December 23rd, 1915, announces the grant of a number of honours, including two V.C.'s, six D.S.O.'s, and thirteen Military Crosses. One of the V.C.'s was an officer of the 25th, or Frontiersmen, Battalion of the Royal Fusiliers, killed in East Africa; four of the new D.S.O.'s were Canadians; while the Military Crosses included one Canadian and one officer of the Newfoundland Contingent. Two of the Military Crosses were conferred upon temporary officers of the R.A.M.C., Captains H. J. Burke and B. J. Hackett, for the following services. Captain Burke's name has twice appeared in the casualty lists as wounded.

Military Cross.

Temporary Captain Henry James Burke, R.A.M.C. (attached 1st/8th Battalion West Yorkshire Regiment, T.F.). For conspicuous gallantry on November 8th, 1915, near Turco Farm. A sergeant in the front line had his leg crushed by the blowing in of a dug-out, and Captain Burke found immediate amputation necessary. In order to save time he called across the open to get his instruments, while the enemy turned a machine-gun on to him. In spite of their fire he returned the same way and coolly performed the operation in the trench while the enemy were shelling it heavily.

Temporary Captain Bartholomew James Hackett, M.B., R.A.M.C. (attached 7th Battalion Suffolk Regiment). For conspicuous gallantry and devotion to duty at Loos on October 2nd, 1915. When the battalion to which he was attached had suffered very heavy casualties and had run out of dressings, Captain Hackett brought up a fresh supply from the dressing station, crossing over about 1,000 yards in the open. He has frequently attended the wounded under fire, and has shown great bravery.

The Military Cross has also been conferred on Second Lieutenant (temporary) Thomas William Gerald Johnston, 5th Connaught Rangers, then a medical student of Trinity College, Dublin, in his fifth year. The award was made, as stated in the official dispatch, for conspicuous gallantry in Gallipoli on several occasions, notably on August 8th, 1915, during the attack on Lone Pine, when he showed the greatest personal bravery; and on August 21st, during the attack on the well and trenches at Kabak Kuyu, when he led his men in the most dashing manner, and, entering the Turkish trenches, bayoneted seven Turks with his own hands. Mr. Johnston came home wounded, and completed his final medical examinations in December, 1915.

CASUALTIES IN THE MEDICAL SERVICES

Killed in Action.

COLONEL ERNEST OCTAVIUS WIGHT, R.A.M.C., was killed by a shell while helping to extricate some motor ambulances from a dangerous position near Ypres on December 19th, 1915. He was born in May, 1858, educated at St. Mary's Hospital, London, and in 1881 took the diplomas of L.R.C.P.Edin. and M.R.C.S.; he took the D.P.H. of the London colleges in 1902. He entered the R.A.M.C., then the Army Medical Department, as surgeon on February 6th, 1882, became surgeon-major on February 6th, 1894, and lieutenant-colonel on February 6th, 1902. He retired on March 6th, 1907, but when the war began he rejoined the army, and in April, 1915, was gazetted to be an Assistant Director of Medical Services, holding that post in the 49th Division when he was killed. He had previously seen service on the north-east frontier of India, in the Lushai campaign of 1892, and received the frontier medal with a clasp. He also held the Royal Humane Society's bronze medal and two vellum testimonials for saving life from drowning on three different occasions. Colonel Wight was the youngest son of the late Robert Wight, F.R.S., of the Madras Medical Service, and of Grazeley Court, Reading, one of the most celebrated botanists of his day.

Wounded.

Captain C. A. Bernard, R.A.M.C. (temporary), France.

Captain J. S. Hall, R.A.M.C. (temporary), Flanders.

Captain A. L. Shearwood, R.A.M.C. (Special Reserve), Mediterranean.

Lieutenant J. Campbell, R.A.M.C. (temporary), Mediterranean.

Lieutenant A. C. Edwards, R.A.M.C. (temporary), Flanders.

Lieutenant F. G. Foster, R.A.M.C. (Special Reserve), Flanders.

DEATHS AMONG SONS OF MEDICAL MEN.

Bath, J. E. W., Lieutenant 5th Battalion Royal Berkshire Regiment, eldest son of Dr. S. Bath, of Newfield, Marlow, killed in France on December 22nd. He was educated at Shrewsbury and at All Souls College, Oxford, and represented Oxford in the inter-university cross-country race in 1913. He joined his regiment as Second Lieutenant on August 29th, 1914.

Hyde, A. C., Major 1st Battalion Oxford and Buckinghamshire Light Infantry, son of the late Lieutenant-Colonel Hyde, I.M.S.

Macdonald, Colin, Captain 1st Attached 2nd Battalion 7th Gurkha Rifles, son of the late Dr. Macdonald, of Dumfries. He was born on May 6th, 1883, entered the army as Second Lieutenant on August 27th, 1902, joined the Indian army on December 18th, 1903, and became Captain on August 27th, 1911.

Stokoe, J. C., Second Lieutenant 12th Battalion Manchester Regiment, attached 6th Battalion Loyal North Lancashire Regiment, eldest son of the late Mr. J. C. Stokoe, M.R.C.S., of Newry. He joined as a Second Lieutenant on March 25th, 1915.

Ward, Charles Francis, Captain Royal Field Artillery, son of Charles Ward, F.R.C.S.I., District Surgeon, of Pietermaritzburg, Natal, killed near Ypres, May 15th, 1915. He was born on January 20th, 1884, joined the army as Second Lieutenant on December 23rd, 1903, became Lieutenant on December 23rd, 1906, and Captain on October 30th, 1914.

MEDICAL STUDENT.

Macrosty, Henry Hugh, Lieutenant Royal Field Artillery, only son of Mr. H. W. Macrosty, of the Board of Trade, killed in France on December 19th, 1915, aged 21. He was educated at Blackheath and at Edinburgh University, where he had completed his second year of medical study. He got his first commission on September 12th, 1914, went to the front in May, and was promoted to Lieutenant in September.

NOTES.

CARE AND EDUCATION OF CRIPPLED SOLDIERS.

IN Italy doctors and philanthropists are showing great activity in providing aid for soldiers mutilated in the war. Provincial and local committees are being formed all over the country; these are grouped under a central "National Federation," having its head quarters in Rome. The Government has made large contributions to the funds of the organization, and the Red Cross Society, together with the local authorities and citizens of the various districts, are liberal in help. Committees have been formed at Lucca, Leghorn, and elsewhere for the aid of soldiers mutilated in the war, and in particular for their training in new occupations. At Reggio Emilia a section for blinded soldiers has been established in connexion with the Garibaldi Institute for the Blind. A large factory has been established at Milan for the making of artificial limbs for mutilated men. It is organized on a non-commercial basis.

It appears from a notice published in the *Deutsche medizinische Wochenschrift* for September 16th, 1915, that the Medical Department of the German War Office has issued orders in connexion with the care of war cripples, to prevent overlapping and delays in providing them with the necessary crutches and artificial limbs. It is pointed out that the transfer of the totally unfit to military hospitals in their home districts is often delayed until artificial limbs have been provided. Not only is invaluable time lost in this manner, but when an artificial limb is provided just before the cripple is sent to a hospital in his own district, readjustments of the artificial limb in such a district are rendered difficult by the fact that the cripple is no longer within easy reach of the firm which has supplied the limb in the first place. For these reasons the heads of military hospitals and other officials connected with the medical service are instructed to transfer, whenever possible, soldiers who have lost a limb to military hospitals in their home districts before providing artificial limbs. The difficulties of transporting by train soldiers who have lost their legs must not, it is added, prevent the execution of this plan, which, it is hoped, will not delay the timely care and education of war cripples.

MEDICAL OFFICERS WANTED.

Field Ambulance.

The Officer Commanding a Field Ambulance, who has had ten months' experience at the front in France and Belgium, is fitting out a Territorial London Field Ambulance for service abroad, and has vacancies for five medical officers. Rates of pay, etc., higher than temporary commissions abroad. Gratuity after one year, £96 2s. Address, No. 999, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

2/2nd South Midland Mounted Brigade Field Ambulance.

Medical officers are urgently wanted for this Field Ambulance. Intending candidates must be willing to sign for foreign service, and should apply to Major A. G. Magrath, Officer Commanding, London Road, Kings Lynn.

Scotland.

THE MIDWIVES (SCOTLAND) ACT.

THE Midwives (Scotland) Act has received the Royal Assent and comes into force to-day (January 1st), although many of its provisions will not take effect until later. Steps will, however, be taken at once to form a Central Midwives Board for Scotland. The composition of the Board was given in full in the JOURNAL for December 4th, 1915, p. 833. Its constitution is briefly as follows: (*a*) Three persons, two of whom shall be certified midwives practising in Scotland, to be appointed by the Lord President of the Council when the number of midwives so qualified is sufficient; (*b*) one appointed by the county councils, one by the burghs, one by the Scottish branch of the Jubilee Institute for Nurses, and one by the Society of Medical Officers of Health for Scotland; (*c*) five be registered medical practitioners, two representing the universities, one the Royal Colleges, and two appointed by the Scottish Committee of the British Medical Association.

The provisions regarding the practice of midwives in Scotland are imposed in two instalments, the first on January 1st, 1917, and the second on January 1st, 1922. They are as follows:

1.—(1) From and after January 1st, 1917, any woman who, not being certified under this Act, shall take or use the name or title of midwife (either alone or in combination with any other word or words), or any name, title, addition, or description implying that she is certified under this Act, or is a person specially qualified to practise midwifery, or is recognized by law as a midwife, shall be liable on summary conviction to a fine not exceeding five pounds.

(2) From and after January 1st, 1922, no woman shall habitually and for gain attend women in childbirth otherwise than under the direction of a registered medical practitioner unless she be certified under this Act; any woman so acting without being certified under this Act shall be liable on summary conviction to a fine not exceeding ten pounds, provided this section shall not apply to registered medical practitioners or to any one rendering assistance in a case of emergency.

(3) No woman shall be certified under this Act until she has complied with the rules and regulations to be laid down in pursuance of this Act.

(4) No woman certified under this Act shall employ an uncertified person as her substitute.

(5) The certificate under this Act shall not confer upon any woman any right or title to be registered under the Medical Acts or to assume any name, title, or designation implying that she is by law recognized as a medical practitioner, or that she is authorized to grant any medical certificate, or any certificate of death or of stillbirth, or to undertake the charge of cases of abnormality or disease in connexion with parturition, but nothing herein contained shall prevent a midwife granting such certificates as may be required by the rules of approved societies or insurance committees in connexion with maternity benefit under the National Insurance Acts.

For women at present engaged in practice as midwives the Act provides as follows:

Any woman who, within two years from the date of this Act coming into operation, claims to be certified under this Act, shall be so certified, provided she holds a certificate in midwifery from the Royal Maternity Hospital of Edinburgh, the Royal Maternity Hospital, Glasgow, the Maternity Hospital, Aberdeen, the Maternity Hospital, Dundee, the Obstetrical Society of London, the Royal College of Physicians of Ireland, the Coombe Lying-in Hospital, and Guinness's Dispensary, the Rotunda Hospital for the Relief of Poor Lying-in Women of Dublin, the National Maternity Hospital, Dublin, the Central Midwives Board for England, or such other certificate as may be approved by the Central Midwives Board for Scotland; or produces evidence satisfactory to the last-mentioned Board, that at the passing of this Act she had been for at least one year in bona fide practice as a midwife, and that she bears a good character.

The period of two years may be extended by the Central Midwives Board for Scotland in special cases where any woman is able to satisfy them that she had reasonable excuse for having failed to make her claim within the prescribed time.

TUBERCULOSIS MATTERS IN EDINBURGH.

The Chief Veterinary Inspector, Mr. A. Gofton, F.R.C.V.S., has reported to the Edinburgh town council that during October 22 carcasses and 38 portions of carcasses had been surrendered at the abattoirs on account of disease, injury, or decomposition; and that of these 7 carcasses and 34 portions of carcasses had been destroyed on account of tuberculosis. He also reported that 2 cows had been removed from city byres on account of tuberculosis of the udder, that one of them had been slaughtered at the abattoir, but that it was not known what became of the other. In answer to a question, Mr. Young (Chairman of the Public Health Committee) stated that diseased animals were allowed to go out of the city because no local authority had any power to seize a cow suffering from tuberculosis, but could only remove her from a city byre. The council directed that a report on the subject should be prepared for its consideration.

At the annual meeting of the Royal Victoria Hospital Tuberculosis Trust it was pointed out that unfortunately the outbreak of the war had coincided with the rearrangement of the Royal Victoria Hospital scheme, and the committee had not felt justified in embarking on large outlays for the present. Sir Robert Philip mentioned the interesting fact that 24 of the former tuberculosis patients at the Royal Victoria Hospital were serving with the colours; one of them had been badly "gassed," but in spite of his former lung trouble a week in hospital served to send him back to the fighting line. Between 50 and 60 former patients of the Royal Victoria Dispensary were also on war service.

Ireland.

WESTMEATH AND THE MOTOR AMBULANCE FUND.

AT the last meeting of the Westmeath Motor Ambulance Fund it was announced that while £1,871 14s. 1d. had been collected, the expenses connected with the working of the fund had only amounted to £8 2s. 1d. After defraying the cost of two Hotchkiss motor ambulances and paying over £400 to the British Red Cross Society for running expenses, there was a balance of £65. Letters were read from the British Red Cross Society thanking the County Westmeath for its great generosity. No. 1 car, which has now been more than six months on the road, has

been taken over by the Government and has been used to carry the wounded from all the recent engagements; it has frequently been under fire. No. 2 car is still at Boulogne, where it is doing good work, and is being driven by a Westmeath man.

VACCINATION DEFAULTERS.

The Local Government Board has called on the guardians of the Enniscorthy Union to enforce the Vaccination Acts against the 5,343 defaulters in the union area. The guardians decided to ascertain from the doctors what effect the notices recently served on defaulters had produced.

FEVER IN TIPPERARY DISTRICT.

Further cases of typhoid fever are reported from Cullen, in the district of Tipperary. Surprise was expressed at a recent meeting of the guardians when it was stated that one of the patients recently admitted to the hospital was a woman aged 86 years. The sanitary subofficer said that many persons "put the fever over them" and were moving amongst the people without knowing that they had had the disease at all.

INFANT AID SOCIETY.

The Infant Aid Society, formerly known as the Dublin Committee for the Prevention of Infantile Mortality, has for some years been doing unostentatiously a very good work amongst the poorest classes in the city. It can safely be said that if it were not for the work of this society the infantile mortality in Dublin, abnormally high as it is, would be considerably higher. There are over 11,000 babies born in Dublin every year, and at least 660 of these die before reaching the age of 1 year. The notification of births is now compulsory in Dublin, and the object of the Infant Aid Society is to secure that as soon as possible after the notification the homes of mothers in the poorer districts shall be visited by one of the trained voluntary workers. There are about 150 of these trained workers, who during the past year paid over 22,500 visits to the mothers and expectant mothers.

England and Wales.

MR. GILBERT BARLING OF BIRMINGHAM.

ON his retirement from the office of surgeon to the General Hospital, Birmingham, after a connexion of thirty-six years, Mr. Gilbert Barling was on December 22nd, at a meeting presided over by the Lord Mayor, presented with an illuminated address and his portrait in oils. Mr. J. E. Willcox (Chairman of the Presentation Committee), speaking on behalf of the 153 subscribers, recalled that Mr. Barling's connexion with the hospital staff began when he was appointed pathologist in 1880, and included the tenure of the office of Dean of the Faculty of Medicine at the University of Birmingham, of which he is now Vice-Chancellor. The hospital, among other debts, owed much to him in respect of the establishment of a pathological department in the hospital. The Lord Mayor accepted the portrait, which is by Mr. E. S. Harper, and will be hung in the board room of the hospital. Mr. W. F. Haslam, senior surgeon of the hospital, then read the address, in which acknowledgement was made of Mr. Barling's invaluable services in the conception, planning, and equipment of the building in which the hospital now carries on its work, and in the promotion of the institution as a medical, surgical, and nursing school. The Lord Mayor, in presenting the address to Mr. Barling, said that the influence he had exercised lay in the force of his personal character, his unselfish consideration for others, and his habit of concentration on any business before him. It was the possession of these qualities, coupled with his skill as a surgeon and administrator, which had earned for Mr. Barling universal esteem, respect, and affection.

Mr. Barling, in his reply, recalled that when he first became connected with the hospital it had one operating theatre, used three or four times a week, while now it had four, used practically every day. The work, too, was of a different character; it used to consist mainly of dealing with accidents, but now it was more concerned with operations for disease. The revolution which had come over surgical methods was based upon the work of two men—a great Frenchman, Pasteur, and a great Englishman, Lister—to whom was due the safety of patients after operation. Another striking difference was that while in 1880, with about 200 beds, the expenditure on alcohol for patients was £350, now, with 340 beds, all constantly occupied, less than half that amount was spent. Speaking of the new pathological department, he said that people were apt to think that the work of a hospital was limited to giving medicine to sick persons or operating for diseases, but a proper scientific basis for its work was essential. With the new department would lie the future development and success of the hospital; it was essential for treatment in the first instance, and next for the investigation of disease. That typhoid fever, which caused over 10,000 deaths during the South African war, had caused so few in this, was not due to the discovery of a new medicine, but to preventive treatment by inoculation. In conclusion, Mr. Barling expressed his thanks to the subscribers.

Sir John Holder then presented Mrs. Barling with a jewel, as a recognition of the encouragement and sympathy she had given her husband in his long and devoted work to the hospital.

LIVERPOOL MEDICAL INSTITUTION.

By invitation of the Council, the Resident Librarian (Mr. William Jones) read a paper at the last meeting on John Evelyn (1620–1706) illustrated by lantern slides and books from the library of the institution. Mr. Jones showed that the same laudable inquisitiveness set forth in the diary of John Evelyn was still as rife among members of the institution as in the days of the great diarist, but remarked facetiously that it was the rooted opinion of many doctors that no work on medicine was worth reading unless the date of publication was 1915! Evelyn presented to the Royal Society, of which he was a Fellow, Malpighi's work on the history of the silkworm, and the Institution Library possessed also a copy of the works of Malpighi on the anatomy of plants. Evelyn visited Padua, and was present for nearly a month at the famous anatomy lectures by Cavaliere Vestlingius. He brought to England "those rare tables of veins, arteries, and nerves," and presented them to the Royal Society. For this gift Evelyn received the public thanks of the society. Mr. Jones threw on the screen several illustrations taken from Vestlingius and his commentator Blasius—books in the possession of the Institution Library. Evelyn mentions a visit to him of Dr. Tyson, author of a work entitled *The anatomy of a Pygmy compared with that of a monkey, an ape, and a man: wherein it will appear that they are all either apes or monkeys and not men as formerly pretended.* Evelyn's account of how he contracted small-pox in Italy and his description of his sufferings were quoted at length. His host received 45 pistoles of gold and his honest doctor 5 only, who, however, thought the fee so generous that, before leaving, Evelyn received at his hands "the regimen of my health written in Latin"! The diarist visited Leyden, and was present at a graduation ceremony in Oxford, and heard early in the morning Dr. Morison discourse learnedly on divers plants in the physic garden. Dr. Morison was physician to Charles II and Regius Professor of Botany at Oxford. He wrote a book, *Praeludium Botanicum*, a copy of which is in the Institution Library. Evelyn was present at a supper at the Royal Society, prepared in one of Monsieur Papin's digesters, and he alludes to its efficiency—"the hardest bones of beef and mutton being made as soft as cheese." He says, "This philosophic supper caused much mirth amongst us and exceedingly pleased all the company."

Evelyn narrates his visit to Tradescant's museum, which was afterwards bequeathed to Elias Ashmole, a very industrious collector of all manner of curiosities. The collection was finally housed in Oxford in a building erected by Sir Christopher Wren, and Mr. Jones was able to show a pamphlet found during a recent cleaning of the Institution Library, which was none other than a catalogue of the exhibits in the Tradescant's Ark; it was printed in 1666, and is an interesting memorial of the origin of the Ashmolean Museum. Of the dodo, "somewhat bigger

than the largest turkey cock, and so legged and footed, but shorter and thicker," there was a stuffed specimen of this in the Tradescantian Museum. It was unfortunately destroyed in 1775, but its head and right foot were preserved. Evelyn was personally acquainted with Sir Thomas Browne, but Sir Kenelm Digby, of the sympathetic powder, he regarded as an arrant mountebank. Sir Kenelm Digby was a distant ancestor of William E. Gladstone, at whose birth Harry Park, a famous Liverpool surgeon, officiated; his daybook, termed *The Book of Genesis*, records the date of the birth of a Gladstone (M.), Rodney Street, December 29th, 1809. The book was exhibited. Lastly, Evelyn recorded that in 1664, during the war with Holland, he was one of the Commissioners appointed to one of the districts of England to take care of sick and wounded and prisoners of war. He was also one of the Commissioners for the building of Greenwich Hospital, and held the office of treasurer.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

At the meeting of the Governors and Council of King Edward's Hospital Fund for London the honorary treasurer, Lord Revelstoke, stated that the amount received for general purposes to December 11th, after payment of expenses, was £124,575, and that the income from investments for 1915 had, in spite of the difficult times, exceeded that for 1914 by about £14,000. Sir William Collins said that the League of Mercy was again in a position to contribute £14,000 to the fund. Sir Savile Crossley announced that Sir Ernest Cassel proposed to give again, as in 1911, the sum of £50,000 to hospitals, £28,000 to be distributed among the institutions receiving grants from the fund this year, and the remaining £22,000 to be given to certain hospitals and kindred institutions in London and the country. Sir William Church, chairman of the Distribution Committee, announced that the amount available for distribution among the London hospitals was £133,500, being the same as in 1914. Mr. Edwin Freshfield, Chairman of the Convalescent Homes Committee, reported that owing to the fact that some of the convalescent homes which had usually received grants in consideration of their treating convalescent patients from London, had, since the beginning of the war, ceased to take such patients, and had been devoted entirely to the treatment of sick and wounded sailors and soldiers; grants to such homes would not be made this year, and in consequence the Committee had been able to reserve a larger number of beds at consumption sanatoriums for the use of patients in London hospitals and to extend the list of hospitals amongst which such beds are allocated.

Canada.

THE REGULAR *versus* THE IRREGULAR PRACTITIONER.

THE inquiry into the practice of medicine in the province of Ontario was commenced by the Honourable Mr. Justice F. E. Hodgins on October 16th, when over 150 representatives of the various organizations concerned were in attendance. In opening the investigation, Mr. Justice Hodgins stated that he had been delegated to inquire into all the different branches of the medical profession which were seeking legislation for recognition. The organizations represented included the Ontario College of Physicians and Surgeons, the Ontario Medical Association, the Provincial Board of Health, the Medical Faculty of the University of Toronto, the Toronto Academy of Medicine, the Ontario College of Dental Surgeons, the Ontario Optometrical Association, the Christian Scientists, the Osteopaths, the Chiropractors, the Homoeopaths, the Drugless Physicians, the Mona Therapists, etc.

The case of the Ontario Medical Association was heard some days later, when an extremely able statement was made by Dr. H. B. Anderson, the president. The association was organized in 1880, and is guided by the following principles: Every person before being legally entitled to treat the sick should comply with the same educational conditions; to understand disease and treat it intelligently necessitates a knowledge of the structure and functions of the body in health, as well as the various conditions acting upon the body to produce change or derangement of those functions; the arbitrary belief in any special dogma, system, or plan of training can no way relieve the individual from the necessity for this training in the fundamentals of intelligent practice; once the would-be practitioner is properly trained and legally qualified, no restriction should be placed on his freedom to obtain further knowledge of any form of treatment or of the right to practise it. Dr. Anderson said that universities had been provided—for instance, the Provincial University at Toronto, and others—to furnish proper education and scientific training, and that it would be an injustice to every one concerned were illiterate, inferiorly educated, or untrained men given the right to practise. He quoted the following passage from the Report of the Carnegie Foundation (1910, pp. 183–6): "The eight osteopathic schools fairly reek with commercialism. Their catalogues are a mass of hysterical exaggerations alike of the earning and curative power of osteopathy." Quotations were also given from Canniff's *The Medical Profession of Upper Canada* to show that in 1812 "the province is (was) over-run with self-made physicians who have no pretensions to knowledge of any kind. . . . They comprehend not the causes or nature of disease, are totally ignorant of anatomy, chemistry, or botany; many know nothing of classical learning or general science."

On behalf of the Provincial Board of Health, evidence was given by Major J. W. S. McCullough, M.D., provincial officer of health, and by Dr. C. J. O. Hastings, medical officer of health, Toronto. The following suggestions were made by Major McCullough: That the standard of medical education should be maintained and keep pace with the advance in scientific knowledge; that those entering upon the study of medicine should have a good preliminary education, equal at least to honour matriculation; that the course of study should embrace seven years of nine months each; that anatomy, physiology, biology, bacteriology, pathology and diagnosis, as well as clinical experience, should be included in the course of study, no matter what form of treatment any physician desired to pursue; and that no unqualified man or woman should be allowed to practise medicine in any form. He referred to the splendid results obtained at the military camp at Niagara; the water of the Niagara River is perhaps more polluted than that of any other river in the Dominion, yet 20,000 men have passed through the camp where this water is used without a single case of typhoid having been traced to infection in the camp, thanks to the inoculation of the men against typhoid and the other precautions taken.

Dr. Falconer, on behalf of the University of Toronto, also insisted upon the necessity for a thorough training in all the branches of medicine before permission was granted to prescribe for or give any treatment to the sick.

A plea for recognition was made by the optometrists on the ground that at the present time eyeglasses were sold as an ordinary commodity regardless of the condition of the wearer's eyes.

The chiropractors demanded equal status with medical practitioners for graduates of their schools, a certain standard of training for all those granted licence to practise chiropractics, a regular chartered chiropractic institution in Ontario, and a chiropractic board of control. They proposed that a certificate of matriculation, or its equivalent, should be demanded of prospective students, that the course of study should embrace at least three years of nine months each, and that the curriculum should include the study of anatomy, pathology, physiology, chemistry, bacteriology, sanitation, prophylaxis, minor surgery, dietetics, the science of chiropractic and adjunctive therapeutics, such as hydrotherapy, anotherapy, electrotherapy, etc. A similar stand was taken by the osteopaths, both claiming that legislation was required to protect graduates of their schools against impostors.

PROHIBITION IN CANADA.

The war has stimulated the temperance movement in every province, but it is in the prairie provinces of the west that the results have been most marked. In Saskatchewan two bills were passed, and on June 30th 405 hotel bars were closed, the licence was taken away from seven clubs and thirty-eight wholesale liquor stores, and twenty-three dispensaries were established under Government control, which are open between the hours

of 9 a.m. and 5 p.m. Hotels in small places will receive financial assistance during the period of readjustment, and municipal assistance will be given so that rest rooms and libraries may be established in hotels. A referendum will be taken at the first December municipal elections after the war, but not before December, 1916, to decide whether the bars shall be reopened, and in December, 1919, a second referendum will decide the fate of the public dispensaries. Under the present Sales of Liquor Act druggists are allowed to sell alcohol or other liquor only on prescription from a physician, and then only in sealed bottles and during the hours when the dispensary, if such exists, is closed. In Alberta a vote of the people was taken, with the result that temperance gained a majority of 20,000 out of a possible vote of 80,000. Prohibition, however, does not come into force until July 1st, 1916. As yet no arrangements have been made to reimburse hotels, but it is probable that this matter will be adjusted later. In Manitoba the Government was petitioned in 1911 by 20,000 electors to take a referendum on the question of abolishing the bars, and the new Liberal Government has promised to take the people's vote on this question next March. If prohibition wins, no licences will be renewed in the province next May.

In Prince Edward Island there has been total prohibition for fifteen years. With the exception of Halifax, the province of Nova Scotia is "dry," as are more than half of the municipalities of New Brunswick, Quebec, and Ontario. In Quebec a movement is on foot to petition the provincial government to close all bars at 7 o'clock in the evening during the war. It is suggested also that "treating" should be prohibited.

Ste. Agathe Sanatorium.

At the seventh annual meeting of the Laurentian Society for the treatment and control of tuberculosis, it was reported that 129 patients had been treated at the sanatorium during the twelve months, of whom 87 were discharged. An analysis of the 321 patients treated since the opening of the institution showed that 237 were living. Of these, 170, or 53 per cent., are perfectly well; and 67, or 21 per cent., are fairly well if they take care of themselves. A weekly charge of 8 dollars is made to patients who are unable to pay more, and last year a deficit of 6,000 dollars was met by subscriptions and donations. The citizens of Abbotsford have given $1,000 to the institution; the amount was collected for the purchase of a machine gun, but diverted to the sanatorium when the Government ceased to accept such gifts. The sanatorium has been placed at the service of the Government for the treatment of soldiers suffering from tuberculosis who have returned from the front. At present twenty-three such patients are under treatment there.

Alberta College of Physicians and Surgeons.

The annual meeting of the Council of the College of Physicians and Surgeons of Alberta took place at Edmonton on October 15th. The Council was appointed last July for a period of four years, and consists of one member from each of the seven districts of the province as follows: Dr. John Park, of Edmonton; Dr. F. W. Crang, of Edmonton South; Dr. R. G. Duggan, of Killam; Dr. R. G. Brett (now Lieutenant-Governor of the Province), of Banff; Dr. R. D. Sanson, of Calgary; Dr. G. E. Learmonth, of High River; and Dr. W. S. Galbraith, of Lethbridge. The annual meeting, at its first session, was devoted to business; Dr. F. W. Crang was elected president; Dr. W. S. Galbraith vice-president; Dr. C. W. Field, of Edmonton, registrar and treasurer; and various committees were appointed.

The first Argentine Congress of Medicine will be held at Buenos Aires in June, 1916.

In the December (1915) number of the *Journal de médecine de Bordeaux* M. René Cruchet gives an account of a "trench journal," the title of which, *Entre les Brancards* (Among the Stretchers), shows that it is devoted to medical matters. It is published under the direction of a distinguished medical officer—J. J. Matignon—and comes out "almost" every week. The contents consist of notes on hygiene with items of news relating to the medical services. The austerity of the *utile* is tempered by a considerable infusion of the *dulce* conveyed in light sparkling verse.

Correspondence.

"MEDICAL CLERKS."

Sir,—As one directly concerned, I read your annotation on "Medical Clerks" with a considerable degree of interest. Your exhaustive criticism of the forms issued under the Mental Deficiency Act (1913) really leaves so little to be said that any remarks I have to make are to be regarded rather as corroborative, and as such may, perhaps, have some value. The filling up of the "Medical Particulars" is, of course, one of the routine duties of the examiner under the Act, and is to be performed in each and every case. Whatever satisfaction may be derived from it by the official mind, it will be admitted that, as a clinical record of a particular patient, it is practically worthless. Apart from the fact, which you comment upon, that the space provided under the different headings bears no relation to their respective importance, it is to be noted that the printed matter actually occupies nearly as much area as that allowed for medical particulars. In most cases there is not even room to answer the question in the simplest terms, and one has perforce to resort to abbreviations. It is as well, perhaps, that the voluminous footnotes—which are highly reminiscent of a railway guide—should state explicitly how the particulars are to be filled in, for where space is so valuable it behoves one to be precise. For instance, under the heading "Teeth," a footnote informs us that the information required is the "number bad." One might have imagined, on general grounds, that in the case of mental defect it would have been useful to have known whether the teeth were "gapped," supernumerary, or irregularly erupted. But, no! all that is wanted is the "number bad." No space is devoted to the palate, though one may opine that palatal abnormalities are at least as important as, say, "enlargement of the thyroid" or "fissuring of the tongue." It must be evident, moreover, that many of the queries do not admit of this categorical form of reply—that, in fact, each and all of them may require amplification or qualification in order to be of any value whatever; and for this there is no room. The space devoted to "aetiological factors," again, can only be utilized by reference to a further schedule with no less than thirty-seven subdivisions. It is evidently felt that there is not room otherwise for even the briefest form of answer, so resort is had to a system of symbols to which the schedule aforementioned supplies the key.

When one remembers that the form supplied by the Board of Education for a similar purpose and for the identical class of case is conceived in a totally different spirit and with a true appreciation of the object to be attained, the present document seems all the more inexplicable. If the intention is to alienate the sympathy and interest of the medical man concerned, this seems to be the right way to go about it. If, however, the objective be what it purports to be—namely, the collection and tabulation of authentic data relating to mental defect—surely a great opportunity is being missed. In actual practice, one may assume that the case-book and private record will supplement and complete what the official documents lack, and that in this, as in other branches of medical research, the progress of knowledge will be ultimately dependent upon individual initiative rather than official encouragement.—I am, etc.,

J. E. Middlemiss,
Medical Officer to the Leeds Mental Deficiency Committee.

Leeds, Dec. 19th, 1915.

BROMIDES IN EPILEPSY.

Sir,—I venture to ask you to allow me to briefly describe my experience in relation to this subject, which includes many years of daily observation of from 90 to 100 cases in the Hanwell Asylum.

Prior to holding my appointment there I had been impressed by seeing two cases of epilepsy, in which by the use of large doses of bromide all fits had been suppressed for long periods, terminate fatally by the occurrence of the status epilepticus. On my taking charge at Hanwell I found bromides in use in very large doses and witnessed several similar terminations, and consequently gave up the use of the drug. At first the number of fits considerably increased, but the irritability of the patients, as

shown in the lessened number of casualties from personal encounters, diminished considerably. The records of fits, however, showed a tendency to diminish in frequency and severity, and in a number of cases ceased altogether as years went on. I have not the slightest doubt that the tendency to dementia in this class of cases was greatly diminished.

In consulting practice I have seen a number of cases, in whom the increasing irritability and excitability under the use of bromide threatened the necessity of control in an asylum, improve on the withdrawal of this drug. I have recently heard from one such case in whom the fits have ceased, and who is now able to take a salaried post.

The withdrawal of the drug must be gradual, or, if sudden, should be accompanied by considerable rest in bed and by abstention from mental work. I have always to regret the insufficient attention to these precautions in one case in which the severe recurrence of the fits led to a return to the drug treatment. The treatment that I adopted was:

1. Rest in the horizontal position after each attack, from a few minutes to two or three days, the rest being continued until all evidence of undue vasomotor irritability had subsided; this was judged by the irritability of the iris, by the irritability of the pulse on variation of the bodily position, and by the emotionality. By this procedure attacks of maniacal excitement and quarrelsomeness were avoided and the harmful effects of the exhaustion produced by the fits was minimized.

2. Avoidance of mental stress or excitement or emotional stresses, and irritation from digestive or sexual causes.

3. Avoidance of toxic conditions. The diet should be adapted to this end rather than to any theoretical scheme of dietetics, most of which I have tried and found wanting.

Epilepsy is certainly not due to a single set of conditions but to several. In this I quite agree with Dr. Mercier.

Muscular exercise in the open air is probably the most important and valuable means of restoration to health in these cases. Attention to general health on general principles, and not specific drug treatment, is most likely, from my experience, to be successful.—I am, etc.,

London, N.W., Dec. 28th, 1915. HENRY RAYNER.

THE TONSILS.

SIR,—Dr. Henry A. Barnes in his monograph[1] reaches conclusions which are being increasingly arrived at by those specially engaged in throat work, and it seems time that these simple rules should guide us in our attitude towards the tonsils.

1. We should decide, in dealing with a tonsil, whether the changes in it will yield to simple measures or whether surgical interference is necessary.

2. If surgical interference is necessary, tonsillectomy is the only operation applicable.

3. In reference to the operation of tonsillectomy, or enucleation of the tonsil, a method definite in its result should be adopted—that is, a method by which the tonsil in its capsule complete is definitely removed. This can be performed practically as expeditiously and with as little risk to the patient as tonsillotomy.—I am, etc.,

Glasgow, Dec. 27th, 1915. W. S. SYME, M.D.

RECRUITING AND DISCHARGE.

The Other Side of the Shield.

SIR,—Your leaderette on "The Medical Examination of Recruits" calls attention to a complaint from medical officers of units at home and abroad of the number of physically unfit men who have been passed as fit for active service. Nothing, however, is said about the enormous number of physically fit men who are daily being discharged from the army for minor defects by these medical officers.

It would be interesting to know how many efficient soldiers have been discharged for small varicoceles, slight degrees of hammer-toe insufficient to cause discomfort in marching, defects of teeth or inability to satisfy the constantly varying standards of eyesight, height, or chest measurement. Last week a man came to see me who had enlisted early in the war. He had a slight amount of hammer-toe and a cardiac murmur, with no displacement of apex beat and no sign or history of cardiac inefficiency. He rapidly rose to the rank of sergeant, and he stated that he was never sick, and never had to fall out when on duty. He was discharged because of having hammer-toes. On the strength of this discharge I passed him ("unfit for infantry") for the mechanical transport as a learner. He was again discharged on joining his unit. He was a good soldier, as proved by his rank, a good character shown on his certificate of discharge, and proved to be physically fit by his ability to stand the severe training of Kitchener's army. This is only one of scores or hundreds of cases that have been brought to my knowledge since the beginning of the war.

As to the reputed carelessness of medical officers, I do not believe it exists to any great extent. It is not remarkable that early cases of tuberculosis should be missed; it is almost a miracle that any should be discovered considering the conditions under which the work has had to be done during the several periods of rapid enlistment, and particularly in the early days of the war and during the first fortnight of this month.

In this town, although every civil practitioner was asked to help (most of them willingly doing so), and although many fresh centres were opened to cope with the rush of recruits, yet it was not uncommon for a doctor to have to examine from eighty to a hundred men a day in a noisy and crowded room.

Among the cases you mention are the chronic epileptics. Can the R.A.M.C. officer diagnose epilepsy in a man who appears intelligent and who denies having had fits? I do not profess to be able to do so. Deformities of limbs are passed sometimes; after all, the army is not a beauty show, and the appearance of a man on parade is not everything. I remember passing a man who had lost the trigger finger of his right hand. He was a gamekeeper, and a most excellent shot.

You mention also cases of hernia. The medical officers of this town were definitely instructed by the colonel inspecting the district that inguinal hernias could be passed for home service if small and capable of being kept up by means of a truss.

You also particularly mention the standard of fitness in the foot. I passed a man with a slight degree of flat-foot, who was promptly discharged on joining his unit. Up to the time of his enlistment he was a professional football player in an Association team.

If men are passed as fit and prove unfit for their work they should be discharged, but it is nothing less than a grave scandal that good and fit men should be discharged for minor defects without giving them a trial, and in my opinion it is better and cheaper that many unfit men should be passed into the army rather than run the risk of losing even a comparatively small number of good soldiers.—I am, etc.,

December, 1915. CIVIL EXAMINER OF RECRUITS.

MEDICAL STUDENTS AND THE INSPECTION OF RECRUITS.

SIR,—May I draw the attention of the governing bodies of medical schools in the three kingdoms, and in Australia and Canada, to the desirability of giving medical students, in their fifth year of study, the opportunity of seeing the actual physical examination of recruits for the army being carried out by the trained medical recruiting officers? There are large recruiting centres in the localities where medical schools exist, and if an application were made to the local recruiting officers, no doubt permission could be obtained. Further, it is possible that two or three lectures could be given to the advanced students each session by the official recruit inspector.

The gain would be great to the students, and to the army, navy, and, indeed, all services where a physical test is needed for entrance.

I often wonder why the associated insurance companies of England do not pay a specialist to go round the medical schools and lecture the advanced students on the insurance inspection routine standard of the various companies. It is to be remembered that we train our students on the morbid conditions of the body; why not let them see the human physique in all its varying health conditions?

One would imagine that the first diploma a man should

[1] BRITISH MEDICAL JOURNAL, October 16th, 1915, p. 569.

take would be the public health diploma of perfect health conditions, and other diplomas as to cure should follow in sequence. "The best wealth is health."—I am, etc.,

London, S.W., Dec. 24th, 1915. G. J. H. EVATT, M.D.

POISONING BY CHLORINE.

SIR,—Adverting to Dr. Hill's paper on the phenomena of chlorine poisoning, it is worthy of note that Sir Charles Cameron of Dublin found chlorine very definitely in the lateral ventricles of the brain in a case of chlorine poisoning which he examined many years ago.

The case in question was that of a man who had been in a small room into which a quantity of chlorinated lime had found its way whilst he was asleep. Cameron's examination took place thirty hours after death, and the odour of chlorine found in the ventricles was quite remarkable.

Dr. Hill's account of the exudation of an albuminous fluid into the alveoli of the lungs, as a usual sequence of the inhalation of chlorine, agrees very closely with the description given by the soldiers who have been "gassed" in Flanders. The sensations are described as like those of a drowning man, and "dryland drowning" was the popular term applied to the symptoms.—I am, etc.,

J. C. MCWALTER, M.D.,
F.R.F.P. and S.Glasg., Lieutenant R.A.M.C.(T.).

Dublin, Dec. 18th, 1915.

Universities and Colleges.

UNIVERSITY OF OXFORD.

THE following degree has been conferred:

D.M.—H. T. Evans, Jesus Coll.

The following candidates have satisfied the examiners in the undermentioned examinations:

FIRST B.M., B.CH.—*Organic Chemistry:* G. Aldred-Brown, P. Boobbyer, W. Boone, T. Brown, R. Emmons, E. Liddell, W. Allan-Row, T. Ryves, N. Smith, H. Toms, E. Watkins. *Anatomy and Physiology:* E. Crook, W. Gover, C. Krige, R. Roberts, G. Stone, E. Woods

SECOND B.M., B.CH.—*Pathology:* J. Blamey, E. Creed, L. Davies, W. Dawson, G. Perkins, C. Sells, N. Sprott *Forensic Medicine and Public Health:* A. Traill, A. Watts, T. Whitcombe. *Materia Medica:* L. Davies, J. Walker. *Medicine, Surgery, and Midwifery:* G. Bowes, L. Davies, A. East, L. Gamesson, G. Gimlette, H. Jeffries, M. Lawrence, H. Oddy, C. Sells, A. Traill, T. Whitcombe.

D.P.H.—*Part I:* E. F. Butler, J. T. MacManus, R. H. Vercoe. *Part II:* E. B. Argles, T. R. Bowen, E. G. Brander.

UNIVERSITY OF CAMBRIDGE.

THE following degrees have been conferred:

M.B.—W. F. Bensted-Smith, E. N. Butler, J. D. Clarke, H. G. Hill.
B.C.—E. N. Butler, J. D. Clarke.

The following candidates have been approved at the examinations indicated:

M.C.—A. T. Edwards, R. A. Ramsay, L. C. Rivett.

FIRST M.B.—*Part I, Chemistry:* G. F. Abercrombie, F. H. S. Caiger, W. R. Carling, H. A. Crowther, N. D. Dunscombe, F. R. G. Hief, P. B. Kittel, R. J. Lythgoe, E. Miller, D. G. Sharp, S. D. Sturton, W. S. R. Thomas, H. B. Yates.
Part II, Physics: A. Barker, A. Carling, H. A. Crowther, N. D. Dunscombe, G. S. W. Evans, F. R. G. Hief, F. B. Hobbs, R. J. Lythgoe, E. Miller, R. Y. Paton, J. Russell, D. G. Sharp, S. D. Sturton, W. S. R. Thomas, A. D. Whitelaw, H. B. Yates.
Part III, Elementary Biology: G. F. Abercrombie, A. Barker, W. R. Carling, G. S. W. Evans, F. R. G. Hief, P. B. Kittel, R. J. Lythgoe, E. Miller, R. Y. Paton, A. D. Porter, A. E. Roche, J. Russell, D. G. Sharp, J. L. Strain, W. S. R. Thomas, M. H. Webb-Peploe, C. H. Whittle, A. W. Wilson, H. B. Yates.

SECOND M.B.—*Part I, Human Anatomy and Physiology:* W. F. Attwater, H. Barbash, L. H. Bartram, P. F. Bishop, E. P. Brockman, H. B. Bullen, W. M. Casper, S. P. Castell, C. B. Cohen, E. J. Crisp, E. C. Curwen, R. W. M. Dendy, C. C. R. Downing, C. H. Gunasekara, A. C. Halliwell, G. G. Havers, A. T. Hawley, W. M. Heald, T. L. Hillier, S. C. Ho, J. M. Lawrie, J. R. Mitchell, P. M. Neighbour, R. A. Olphert, F. P. N. Parsons, R. H. Reece, R. H. O. B. Robinson, A. T. Spoor, H. F. Squire, W. S. Sykes, M. S. Thomson, J. P. Wells, D. E. Wijewardene, R. L. Williams, D. W. Winnicott, F. G. Wood, J. M. McC. Wright.

THIRD M.B.—*Part I, Surgery and Midwifery:* G. A. Back, S. L. Bhati, H. V. Deakin, A. N. Drury, C. Gardiner-Hill, S. H. M. Johns, R. F. Jones, W. N. Leak, W. New, S. R. Prale, M. K. Robertson, *H. W. Scott, G. E. Spicer, N. S. Tirard, F. H. Young.

* Surgery only.

UNIVERSITY OF LONDON.

THE following candidates have been approved at the examinations indicated:

M.D.—BRANCH I (*Medicine*): A. S. Erulkar.
BRANCH IV (*Midwifery and Diseases of Women*): Lilias M. Blackett, Dorothy C. Logan.

SECOND EXAMINATION FOR MEDICAL DEGREES (*Part I*).—*Marjorie Back, J. Brodetsky, *Kathleen M. Cogan, Doris M. Howard, A. StG. J. McC. Huggett, Muriel M. Kenworthy, Jessie C. Ritchie, Joan M. Ross, Ethel N. Thomas.

* With distinction.

UNIVERSITY OF EDINBURGH.

THE following candidates have been approved at the examination indicated:

PRACTICAL MATERIA MEDICA.—Catherine J. Anderson, E. Arosemena, G. S. Bainbridge, I. C. C. Barclay, W. T. Benson, E. Chonglop, A. C. Y. Chow, J. A. L. Cook, J. H. Crawford, D. A. Cunningham, A. A. Denham, Kshirendra M. Dey, E. D. D. Dickson, H. J. A. Dingwall, J. K. van O. Duminy, G. W. Dunlop, M.A., P. B. Eaton, B.A., W. Everett, D. Fergusson, G. S. Freeman, R. N. Gibson, H. A. E. Girby, Alice M. Graham, O. Gray, Jeannie J. Harper, T. L. P. Harries, W. H. Herberg, R. A. S. Hoyte, W. G. Hughes, N. W. Johnston, J. H. Kerr, J. I. Kuit, J. L. Lamont, B.A., G. Lange, M. Lipschitz, C. M'Donald, R. B. MacGregor, H. B. Mackenzie, R. N. Mackenzie, A. W. Mackie, J. M'Nab, J. M. Macpherson, W. R. Mathewson, G. H. H. Maxwell M. Melvin, J. S. Moroka, T. B. Moyes, J. M. S. Nichol, H. J. Parish, E. G. H. Payne, H. S. Percival, F. W. Poole, D. Rankin, J. Rauch, Dorothy A. Robertson, W. G. Robson, M. Sash, C. E. Scott, Mahmoud Z. Sheriff, C. Simpson, D. W. Sinclair, G. M. S. Smith, Janet S. Smith, Marguerite R. Stirling, E. B. Thounissen, J. L. Timothy, D. L. M. Tod, A. E. P. Vanier, P. F. V. Walsh, J. S. Westwater, J. L. Wilson, W. L. Zeeman.

UNIVERSITY OF ST. ANDREWS.

THE following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—Ram Nath Bhandari, T. P. Buist, Louise E. Fraser, C. W. Morrison A. A. B. Scott, J. M. Stalker.

THIRD PROFESSIONAL.—*Materia Medica and Therapeutics:* F. J. Charlton, J. MacD. Clark, Mary I. S. Cuthbert, Kathleen I. David. *Pathology:* F. J. Charlton.

D.P.H.—*First Examination (Chemistry, Physics and Meteorology, and Bacteriology):* A. C. Craighead.
Second Examination (Sanitary Law and Vital Statistics, and Practical Sanitation and Epidemiology): K. M'Lay.

UNIVERSITY OF DUBLIN.

AT the Winter Commencements held in Trinity College on December 20th the following degrees were conferred:

M.B., B.CH., B.A.O.—D. H. Hall, T. W. G. Johnson, G. F. L. Murphy, F. W. O'Connor, R. L. Vance.
M.D.—B. D. Crichton; *in absentia*, Rev. E. E. Lavy.
M.CH.—A. Chance.
L.M., L.CH., L.A.O.—*In absentia*, T. E. B. Beatty.

SCHOOL OF PHYSIC, TRINITY COLLEGE.

The following candidates have passed the examinations indicated:

PRELIMINARY SCIENTIFIC.—*Chemistry:* D. H. G. Fishbourne, H. A. Lavelle, J. C. J. Callanan, W. J. Hogan, E. W. Harris, G. R. L. Jordan, J. G. Holmes, Mayo Frances Meade, E. H. Montgomery, J. F. Van Staden, S. J. Laverty. *Physics:* C. W. Parr, T. F. L. Cary, G. R. L. Jordan. *Botany and Zoology:* J. F. Sheppard, V. G. Walker, R. D. Murphy, J. G. Holmes, D. H. G. Fishbourne, Eileen H. Dowse, P. J. Healy, A. V. Foster, H. C. Dundon, E. H. Montgomery, P. J. Duggan.

INTERMEDIATE MEDICAL.—*Part I (Anatomy and Physiology):* E. J. Lyndon, W. F. McConnell, John B. McGranahan, C. Keller, W. L. Young, P. A. Dormer, K. Greer, J. M. Hill, T. Tabuteau, J. Posner, D. McElwee, F. J. Dymoke, F. W. Godbey, J. A. W. Cullen, J. G. Bird.
Part II (Applied Anatomy and Applied Physiology): C. G. Ambrose, P. C. Parr, Margaret Wolfe, P. Casey, W. J. Hamilton, J. E. Hill, Meta G. Jackson, F. J. Dymoke.
M.D.—B. D. Crichton, Rev. E. E. Lavy.
M.CH.—A. Chance (high marks).

FINAL MEDICAL.—*Part I (Medical Jurisprudence and Hygiene, Materia Medica and Therapeutics, and Pathology):* A. H. Davidson, W. F. Wicht, P. A. Hall, W. Garde-Browne, J. G. Bird, R. W. Prichard, J. P. Macnamara, J. B. Taylor, *H. H. Molloy, †M. Hamilton-Johnstone, ‡M. C. Dippenaar.
Part II (B.A.O., Midwifery and Gynaecology): J. W. Bigger, T. P. Chapman, R. C. B. Ramsay, Clotilda B. Bevis, R. M. B. Gordon, F. W. O'Connor, W. Garde-Browne, P. A. Hall, C. L. McDonogh, W. L. Bates.

* Pathology, Medical Jurisprudence, and Hygiene. † Pathology. ‡ Materia Medica, Medical Jurisprudence, and Hygiene.

FINAL.—*Part II (B.Ch., Surgery):* T. W. G. Johnson, G. W. Doran, T. E. Beatty, F. W. O'Connor.
Part II (M.B., Medicine): A. F. Grimbly, E. Lipman, F. J. Murphy, R. L. Vance, Esther V. Adderley, Marie A. Hadden, D. H. Hall, Violet M. Deale, G. L. Murphy, F. W. O'Connor.

SPECIAL FINAL.—*Part II (B.Ch. Surgery):* Geraldine Murphy, H. Mitchell, C. McL. West, W. F. Wilson, C. G. Sherowitz, W. B. Walker, G. Bateman, T. W. Sweetman, R. L. Vance, R. H. Graham, J. H. C. Walker, D. H. Hall, G. L. Murphy, W. Hunt, A. G. Fisher.
Part II (M.B., Medicine): T. W. Sweetman, H. Mitchell, Clara B. M. Adderley, C. G. Sherowitz, E. Mannin, T. E. Beatty, R. H. Graham, W. Hunt, A. G. Fisher, M. B. King.
Part II (B.A.O., Midwifery and Gynaecology): J. A. C. Kidd, J. M. Ryan, M. A. Hadden, A. F. Grimbly, L. Blumberg, Eileen G. Gwynn, T. G. Roche, E. Boyers, W. Hunt.

D.P.H.—*Parts I and II:* Ratan Edulji Dastur.

LONDON SCHOOL OF TROPICAL MEDICINE.

THE following candidates were approved at the examination held at the close of the forty-ninth session:

*V. A. Goonetilleke, M. de Costa, †T. Ryan, E. J. Rowbotham, R. J. Tata.

* Ceylon Military Service. † West African Medical Service.

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have been approved in the subjects indicated:

SURGERY.—*†A. Z. Abushady, *†R. N. Craig, *†C. B. De Forest, †W. Fox, *L. Kahan, *I. H. Lloyd, *†J. S. Matthews, *†A. W. North, *† I. H. Pearse, *†E. E. Samaraweera, *†J. G. T. Thomas.

MEDICINE.—*†W. F. R. Castle, †R. N. Craig, *W. J. May, *†G. S. Mitchell, *†A. W. North, *†I. H. Pearse, *†T. C. Russell, *†R. H. Yolland.

FORENSIC MEDICINE.—W. F. R. Castle, R. N. Craig, G. S. Mitchell, I. H. Pearse, C. G. G. Winter, R. H. Yolland.

MIDWIFERY.—R. N. Craig, I. H. Lloyd, I. H. Pearse.

*Section I. †Section II.

The diploma of the Society was granted to the following candidates, entitling them to practise Medicine, Surgery, and Midwifery: A. Z. Abushady, R. N. Craig, W. Fox, I. H. Pearse, and E. E. Samaraweera.

Medico-Legal.

CHARGES FOR WATER FOR WASHING CARS.

SOME doubts appear to exist among medical men as to their liability to meet special charges which are made in most districts by water companies for the supply of water used for the washing of motor cars and carriages.

The answer as to liability depends upon the powers conferred upon each particular company. Like railways, tramways, and undertakings of a similar nature, a public water supply of any magnitude can only be constructed and worked with the authority of Parliament, which passes a special Act dealing with the powers and liabilities of each undertaking which it is proposed to construct. It therefore follows that the powers of individual water companies, and the charges they are entitled to make, will vary. Under the Waterworks Clauses Act, 1847, the undertakers who seek parliamentary powers must be prepared to provide and keep in their mains a supply of pure and wholesome water sufficient for the domestic use of all the inhabitants of the town or district for which the supply is intended, and although this domestic supply is usually charged upon a fixed basis, a special Act may sometimes provide that even domestic supply water may be charged by meter. Assuming, however, that a particular company charges for water supplied for domestic purposes at a fixed annual sum varying with the rateable value of the premises supplied, the occupier is entitled to the use of the water for the ordinary and reasonable purposes of domestic life, and the company is not entitled in the absence of special provision in its special Act to make further charges for such uses as for baths, waterclosets, the watering of gardens, or the washing of carriages kept for private use. Where, however, water is used for trade purposes, water companies are almost universally empowered to make a special charge.

It was decided in a case brought by the Harrogate Corporation in 1907 that water used for washing a carriage or motor car used by a medical man in connexion with his practice was not used for a trade or business, and the sole question therefore is as to whether in each individual case the water company has parliamentary powers to limit the uses of water supplied for domestic purposes, and to make a special charge in respect of water used for motor cars.

This, as we have pointed out, can be ascertained, and can only be ascertained, from the terms of the Act of Parliament by which any individual water company is governed, and any medical man upon whom this charge is made, and who is in doubt as to his position, will do well to ask his water company for their authority. Until 1907 the Metropolitan Water Board had no power to make such a charge, but in that year they sought and obtained from Parliament additional powers to make it; and, so far, therefore, as the metropolis is concerned, the charge is one which cannot be resisted. No doubt other water authorities and companies have in a large number of cases followed suit.

Obituary.

LIEUTENANT-COLONEL L. F. CHILDE, I.M.S.,

FORMERLY PRINCIPAL OF GRANT MEDICAL COLLEGE, BOMBAY.

WE regret to announce the death of Lieutenant-Colonel Letterstedt Frederick Childe, I.M.S., which occurred on December 14th while on a visit at Southsea to his brother, Lieutenant-Colonel C. P. Childe, R.A.M.C.(T.), Senior Surgeon to the Royal Portsmouth Hospital. Lieutenant-Colonel Childe had been in indifferent health for the past three years, the result of long and arduous service as professor at the Grant Medical College, Bombay, and also as physician to the Jamsetjee Jeejeebhoy Hospital in the same city.

Lieutenant-Colonel Childe received his medical education at Guy's Hospital, and graduated M.B.Lond. in 1885. He entered the Indian Medical Service in March, 1887, taking a high place in both the entrance and the Netley examinations. He arrived in India in November of the same year, and was posted to Poona on general duty. After a short stay at Poona he was appointed to the officiating medical charge of the 12th Bombay Infantry at Ahmedabad, where he remained until the end of 1888. He then proceeded to the medical charge of the 8th Bombay Infantry at Rajput, and shortly after went with this regiment to Pishin, in Baluchistan, on the North-West Frontier. At the end of 1889 he was summoned to Bombay to take up duties as professor of pathology and curator of the museum at the Grant Medical College, as well as those of the second physician at the Jamsetjee Jeejeebhoy Hospital. In this appointment he worked up to the year 1902, when he was promoted to be professor of medicine and first physician of the same institutions.

In March, 1913, he succeeded in addition to the principalship of the Grant Medical College and the senior medical officership of the Jamsetjee Jeejeebhoy Hospital. He put in much arduous service in these institutions with which he was so long connected, and his labours were particularly trying in the early years of the great plague epidemic in Bombay. To him belongs the credit of being the first to recognize and describe the pneumonic form of plague, and his original description of this form of the disease holds good to the present day. Colonel Childe's name will long remain in the memory of the medical profession of Bombay, among whom are many who were his pupils and who owe much to his teaching. He particularly shone as a clinical teacher, and "Dr. Childe's clinics" were greatly appreciated and followed with the keenest attention by his students. As a consultant Lieutenant-Colonel Childe was highly thought of for his deliberate and very sound judgements. He was a man of few words, but when he spoke it was always to the point, and it was certain that his opinions were based on sound logical grounds. The writer of this memoir is a friend of long standing, and he and a host of other old friends deeply mourn the death of one for whom they had a great affection. Lieutenant-Colonel Childe had only recently retired from the Indian Medical Service, and it is very sad that he did not live to enjoy the years of his well-earned rest with his family in England. Colonel Childe was the second son of the late Rev. G. F. Childe, formerly professor of mathematics of the South African College, Cape Town. He was born in South Africa in the year 1859, and received his school and college education in that country, coming to England in the year 1878 and entering as a student at Guy's Hospital.

He married Edith, the daughter of the late Mr. A. Murray, formerly manager of the Bank of Bombay, by whom he leaves two sons and two daughters.

WE regret to announce the death of Dr. M. C. MOLONEY, J.P., which took place at his residence, Tulla, on December 4th. Though he had been ailing for some time his death occurred suddenly. Dr. Moloney was a student of the Royal College of Surgeons in Ireland, and became a Licentiate of the College in 1881. After practising for a few years in London he was appointed medical officer to Tulla Workhouse Infirmary and Fever Hospital, which post he held to his death. He was a justice of the peace for co. Clare, where his family had been well known for many years. There were few doctors in Munster who occupied a higher place in the esteem of his professional brethren than Dr. Moloney, and his skill no less than his cheery manner made him beloved by his patients. His death is deeply felt by all the people in his district, rich and poor alike, and a personal loss to many of his profession.

DEATHS IN THE PROFESSION ABROAD.—Among the members of the medical profession in foreign countries who have recently died are Dr. Homer G. Newton, one of the founders of the Brooklyn Eye and Ear Hospital, and an early specialist in diseases of these organs in Brooklyn, New York, aged 79; Dr. William Noyes, formerly superintendent of the Boston Insane Hospital and clinical instructor in Harvard Medical School, aged 58; Dr. Henri Parmentier, president of the French Medical Committee and chief physician to the auxiliary hospital of the National Federation; Dr. Potiquet, of Paris, well known by his psycho-physiological studies of Madame Récamier,

Chateaubriand, and other literary, social, and political celebrities; Dr. Schmidt-Rimpler, sometime professor of ophthalmology in the University of Halle, aged 77; Dr. Ville, professor of medical chemistry and pharmacology in the University of Montpellier, aged 66; and Dr. Camille Vincenti, lecturer on hygiene in the University of Rome, editor of the *Avvenire Sanitario*, aged 52.

The Services.

EXCHANGE DESIRED.

CAPTAIN, Field Ambulance, desires exchange with another officer at Casualty Clearing Station, General or Stationary Hospital, B.E.F. Address No. 6050, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Medical News.

THE next meeting of the Medical Society of London will be held on Monday, January 17th, when a discussion on gunshot wounds of the chest will be introduced by Colonel Sir John Rose Bradford, F.R.S., and Captain H. Morriston Davies, F.R.C.S.

AT the meeting of the Surgical Section of the Royal Society of Medicine on February 2nd, at 5.30 p.m., Dr. Hernaman-Johnson will give a demonstration of the use of condensers in the treatment of nerve lesions.

THE General Superintendent and Secretary of the Manchester Royal Infirmary asks us to state, for the information of those who have been connected in any way with the infirmary, that it is proposed to raise a fund to commemorate the memory of Sister French, who died on November 20th, after thirty-five years of loyal and devoted service. It is hoped to complete the panelling in the chancel, and to place a tablet in her ward.

THE Cornell University Medical College, New York, has recently reorganized its surgical service at Bellevue Hospital. At the head of it there is now one "visiting surgeon in charge," who has general supervision over the entire work. There are two visiting surgeons, who also have a continuous service limited to some special subdivision of general surgery. Under the visiting surgeon in charge are two associate visiting surgeons, who are full-time salaried officers; each has the care of one-half of the service. They have as assistants four juniors, who are also surgeons to the out-patient department. The organization also includes a laboratory of surgical pathology and a laboratory of experimental surgery, each under a full-time salaried man. These laboratories are available to all members of the staff, who there have the privilege of working on their individual problems.

THE Factory and Workshop Act, 1901, Section 73, required every medical practitioner attending on or called in to visit a patient whom he believed to be suffering from certain conditions, which were enumerated, contracted in any factory or workshop, to send to the Chief Inspector of Factories at the Home Office, London, a notice stating the name and address of the patient and the nature of the disease; the fee for making this service is 2s. 6d. Should he fail to send such notice he becomes liable to a fine not exceeding 40s. The Home Secretary has now made an order, which comes into force this day (January 1st), applying the provisions of the section to all cases of *toxic jaundice* occurring in a factory or workshop—that is, jaundice due to tetrachlorethane or nitro- or amido-derivatives of benzene or other poisonous substance.

THE Paris Académie des Sciences, at a meeting held on November 29th, 1915, awarded the Le Conte prize, of the value of £2,000, to Sir Almroth Wright for the part taken by him in the introduction of antityphoid vaccination into medical practice. Among other prizes awarded at the same sitting were the Jecker prize of £400, given to M. Gabriel Bertrand, of the Pasteur Institute, for his chemical researches; the Lallemand prize of £40, given to Dr. Jules Glover for a treatise on the physiology of the voice applied to art and industry; and the Montyon prize of £30, given to Dr. André Thomas for his researches on cerebellar localizations. The awards of the prizes of the Académie de Médecine were announced at a meeting held on December 16th, 1915. Owing to the war the number of candidates was much below the average, and several of the most important prizes were not awarded, while many of the others were divided.

Letters, Notes, and Answers.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Mediocra, Westrand, London;* telephone, 2634, Gerrard. The address of the Irish office of the British Medical Association is 16, South Frederick Street, Dublin.

ANSWERS.

J. D. writes in reply to a question by "S." regarding snoring, and suggests (1) the thorough examination of the nasal passages and the removal of any obstruction to normal respiration; (2) the correction of any acquired habit by wearing a suitable chin support to prevent mouth-breathing at night.

ADRENALIN IN ASTHMA.

W. M. C. writes, in reply to N. S. C., who asks for particulars of experience of the use of subcutaneous injections of adrenalin in asthma: I have been using adrenalin (Parke, Davis and Co.) 1 in 1,000 solution for subcutaneous injections for asthma for the last four years. I begin with 5 minims and gradually work up to 10 minims. I do not inject until the breathing is pretty bad. I have injected it eight times in twenty-four hours (10 minims each dose), but three and four times a day was about the average. After injection the patient becomes deadly pale and feels faint, and there are slight muscular tremors, or trembling of the hands, for about an hour. The breathing is relieved immediately. Twice my patient suffered badly from symptoms of impending death. Great pallor, faintness, and acute pain at the base of the brain, following immediately after the injection. The administration of a little brandy brought the patient round. I have also found the following powder of great use when I wished to discontinue the adrenalin: Thiobrom. sod. sal., gr. viij, caffeine valer., gr. iv. It is taken in water; it has a very disagreeable smell, but a not unpleasant bitter aromatic taste. The patient gets relief in about an hour, and is again able to lie down. After adrenalin the patient should rest for about an hour. This treatment does not cure, only relieves. At present I have a patient under treatment with a serum made from germs from his nose, throat, and sputum, and after eleven injections—one a week—he is now almost free from asthma.

DR. W. H. SPURGIN (Newcastle-on-Tyne), who writes that he has had considerable experience in the administration of adrenalin, suggests the injection of adrenalin sol. ♏ x, morphine gr. ¼ every night, increasing the morphine as required.

LETTERS, NOTES, ETC.

PHYSIOLOGICAL CARDIAC IRREGULARITY.

DR. WILLIAM BRAMWELL (Liverpool) writes: Sir James Mackenzie's amusing account of his difficulty in convincing a medical practitioner that there is such a thing as physiological cardiac irregularity reminds me of a lady aged 80 whom I last saw a year ago and whom I have attended at intervals during the last eighteen years. All her life she has been the subject of the most remarkable cardiac irregularity I have ever examined. A succession of irregular beats, sometimes quick and sometimes slow, would be followed by the most alarming pauses such as would beguile the majority of practitioners not acquainted with her idiosyncrasy into warning her relatives of her approaching dissolution. The only sign, however, of cardiac insufficiency besides that ascertained by auscultation and palpation—there being no indication of murmur or valvular deficiency—was that her cheeks and nose were surcharged with minute venules, which gave a slight appearance of cyanosis. She had, however, eyes of piercing brightness, which seemed to rival the vivacity of youth in clearness and quickness of movement; and without the slightest indication of breathlessness she would talk for long periods in a deliberate and domineering manner, which would brook no interruption, one of her chief delights being the indulgence in a little biting sarcasm at the expense of certain luckless physicians who had ventured to remark that all was not right with her heart. This case, at any rate, will show that it is quite possible for extreme irregularity of heart to last through a long life and be compatible with a healthy and even a vivacious old age.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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Seven lines and under	0	5	0
Each additional line	0	0	8
A whole column	3	10	0
A page	10	0	0

An average line contains six words.

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Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.